FIGURE 1

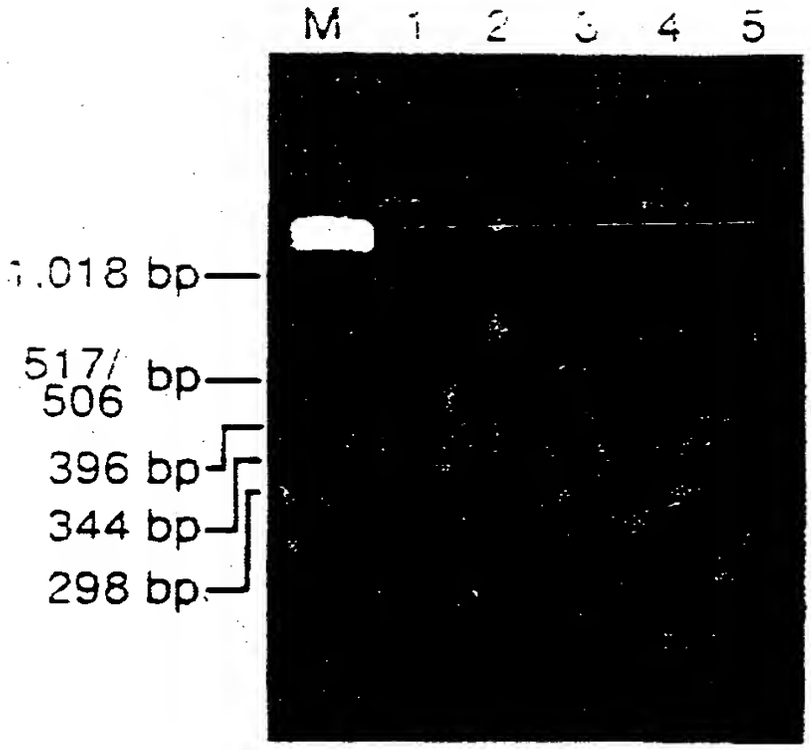

FIGURE 2A

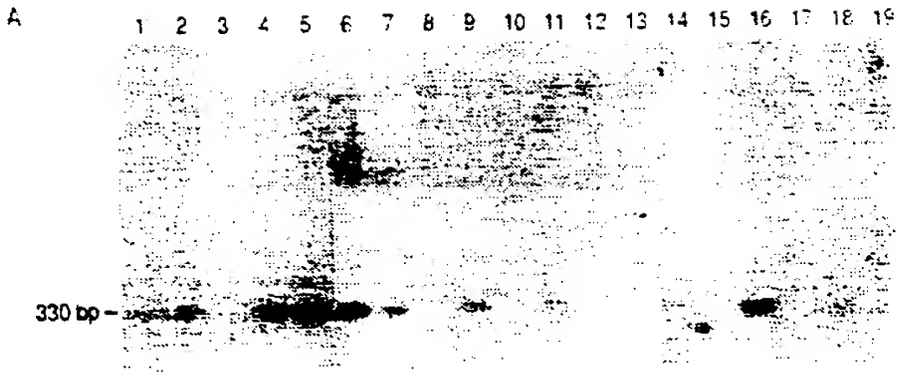

FIGURE 2B

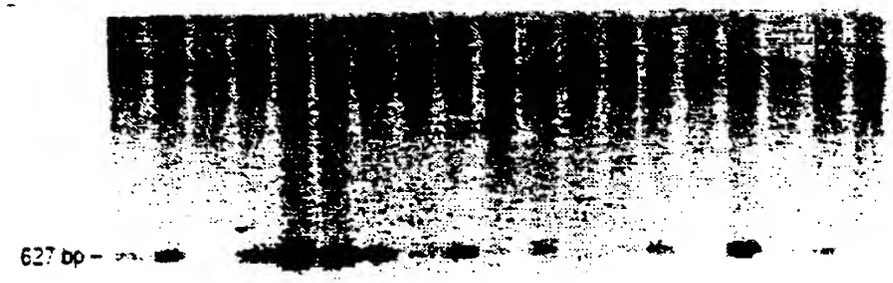

FIGURE 3A-1

SEQ. ID. NO. 1

```
TCGAGTCGGA GAGTTGGCAC AGGCCTTGAG CTCGCTGTGA CGTTCTCACG GTGTTGGTTG      60
GGATCAGCTG GTGACTCAGA CAAGTCTTGA GCTCTACAAC GTAACATACG GGCTGATGCC     120
CACCCGATAC CAGAATTACG CAGTCGGCAA TTCTGTGCCC TAGAGTCACC TCAAAGAATA     180
ATCTGTGGTG TCCAAGGGGA GGGTTCTGGG GCCGGCTACT TAGAAACCGC CATAGATCGG     240
GCAGGGTGGA GTACTTGAGG AGCCGGCGGT AGGTGGCCAG GTGGGCCCGG TTACCTGCTC     300
TTTTGCGTGC TGCTGGAAGC CTGCTCAGGG ATTTCTTAAC CTCGGCCTCG GTTGGACGTA     360
CCATGGCAGA AGGCGGTTTT GGAGCGGACT CGGTGGGGCG CGGCGGAGAA AAGGCCTCTG     420
TGACTAGGGG AGGCAGGTGG GACTTGGGGA GCTCGGACGA CGAATCAAGC ACCTCCACAA     480
CCAGCACGGA TATGGACGAC CTCCCTGAGG AGAGGAAACC ACTAACGGGA AAGTCTGTAA     540
AAACCTCGTA CATATACGAC GTGCCCACCG TCCCGACCAG CAAGCCGTGG CATTTAATGC     600
ACGACAACTC CCTCTACGCA ACGCCTAGGT TTCCGCCCAG ACCTCTCATA CGGCACCCTT     660
CCGAAAAAGG CAGCATTTTT GCCAGTCGGT TGTCAGCGAC TGACGACGAC TCGGGAGACT     720
ACGCGCCAAT GGATCGCTTC GCCTTCCAGA GCCCCAGGGT GTGTGGTCGC CCTCCCCTTC     780
CGCCTCCAAA TCACCCACCT CCGGCAACTA GGCCGGCAGA CGCGTCAATG GGGGACGTGG     840
GCTGGGCGGA TCTGCAGGGA CTCAAGAGGA CCCCAAAGGG ATTTTTAAAA ACATCTACCA     900
AGGGGGGCAG TCTCAAAGCC CGTGGACGCG ATGTAGGTGA CCGTCTCAGG GACGGCGGCT     960
TTGCCTTTAG TCCTAGGGGC GTGAAATCTG CCATAGGGCA AAACATTAAA TCATGGTTGG    1020
GGATCGGAGA ATCATCGGCG ACTGCTGTCC CCGTCACCAC GCAGCTTATG GTACCGGTGC    1080
ACCTCATTAG AACGCCTGTG ACCGTGGACT ACAGGAATGT TTATTTGCTT TACTTAGAGG    1140
GGGTAATGGG TGTGGGCAAA TCAACGCTGG TCAACGCCGT GTGCGGGATC TTGCCCCAGG    1200
```

FIGURE 3A-2


```
AGAGAGTGAC AAGTTTTCCC GAGCCCATGG TGTACTGGAC GAGGGCATTT ACAGATTGTT   1260
ACAAGGAAAT TTCCCACCTG ATGAAGTCTG GTAAGGCGGG AGACCCGCTG ACGTCTGCCA   1320
AAATATACTC ATGCCAAAAC AAGTTTTCGC TCCCCTTCCG GACGAACGCC ACCGCTATCC   1380
TGCGAATGAT GCAGCCCTGG AACGTTGGGG GTGGGTCTGG GAGGGGCACT CACTGGTGCG   1440
TCTTTGATAG GCATCTCCTC TCCCCAGCAG TGGTGTTCCC TGTCATGCAC CTGAAGCACG   1500
GCCGCCTATC TTTTGATCAC TTCTTTCAAT TACTTTCCAT CTTTAGAGCC ACAGAAGGCG   1560
ACGTGGTCGC CATTCTCACC CTCTCCAGCG CCGAGTCGTT GCGGCGGGTC AGGGCGAGGG   1620
GAAGAAAGAA CGACGGGACG GTGGAGCAAA ACTACATCAG AGAATTGGCG TGGGCTTATC   1680
ACGCCGTGTA CTGTTCATGG ATCATGTTGC AGTACATCAC TGTGGAGCAG ATGGTACAAC   1740
TATGCGTACA AACCACAAAT ATTCCGGAAA TCTGCTTCCG CAGCGTGCGC CTGGCACACA   1800
AGGAGGAAAC TTTGAAAAAC CTTCACGAGC AGAGCATGCT ACCTATGATC ACCGGTGTAC   1860
TGGATCCCGT GAGACATCAT CCCGTCGTGA TCGAGCTTTG CTTTTGTTTC TTCACAGAGC   1920
TGAGAAAATT ACAATTTATC GTAGCCGACG CGGATAAGTT CCACGACGAC GTATGCGGCC   1980
TGTGGACCGA AATCTACAGG CAGATCCTGT CCAATCCGGC TATTAAACCC AGGGCCATCA   2040
ACTGGCCAGC ATTAGAGAGC CAGTCTAAAG CAGTTAATCA CCTAGAGGAG ACATGCAGGG   2100
TCTAGCCTTC TTGGCGGCCC TTGCATGCTG GCGATGCATA TCGTTGACAT GTGGAGCCAC   2160
TGGCGCGTTG CCGACAACGG CGACGACAAT AACCCGCTCC GCCACGCAGC TCATCAATGG   2220
GAGAACCAAC CTCTCCATAG AACTGGAATT CAACGGCACT AGTTTTTTTC TAAATTGGCA   2280
AAATCTGTTG AATGTGATCA CGGAGCCGGC CCTGACAGAG TTGTGGACCT CCGCCGAAGT   2340
CGCCGAGGAC CTCAGGGTAA CTCTGAAAAA GAGGCAAAGT CTTTTTTTCC CCAACAAGAC   2400
```

FIGURE 3A-3

AGTTGTGATC TCTGGAGACG GCCATCGCTA TACGTGCGAG GTGCCGACGT CGTCGCAAAC 2460

TTATAACATC ACCAAGGGCT TTAACTATAG CGCTCTGCCC GGGCACCTTG GCGGATTTGG 2520

GATCAACGCG CGTCTGGTAC TGGGTGATAT CTTCGCATCA AAATGGTCGC TATTCGCGAG 2580

GGACACCCCA GAGTATCGGG TGTTTTACCC AATGAATGTC ATGGCCGTCA AGTTTTCCAT 2640

ATCCATTGGC AACAACGAGT CCGGCGTAGC GCTCTATGGA GTGGTGTCGG AAGATTTCGT 2700

GGTCGTCACG CTCCACAACA GGTCCAAAGA GGCTAACGAG ACGGCGTCCC ATCTTCTGTT 2760

CGGTCTCCCG GATTCACTGC CATCTCTGAA GGGCCATGCC ACCTATGATG AACTCACGTT 2820

CGCCCGAAAC GCAAAATATG CGCTAGTGGC GATCCTGCCT AAAGATTCTT ACCAGACACT 2880

CCTTACAGAG AATTACACTC GCATATTTCT GAACATGACG GAGTCGACGC CCCTCGAGTT 2940

CACGCGGACG ATCCAGACCA GGATCGTATC AATCGAGGCC AGGCGCGCCT GCGCAGCTCA 3000

AGAGGCGGCG CCGGACATAT TCTTGGTGTT GTTTCAGATG TTGGTGGCAC ACTTTCTTGT 3060

TGCGCGGGGC ATTGCCGAGC ACCGATTTGT GGAGGTGGAC TGCGTGTGTC GGCAGTATGC 3120

GGAACTGTAT TTTCTCCGCC GCATCTCGCG TCTGTGCATG CCCACGTTCA CCACTGTCGG 3180

GTATAACCAC ACCACCCTTG GCGCTGTGGC CGCCACACAA ATAGCTCGCG TGTCCGCCAC 3240

GAAGTTGGCC AGTTTGCCCC GCTCTTCCCA GGAAACAGTG CTGGCCATGG TCCAGCTTGG 3300

CGCCCGTGAT GGCGCCGTCC CTTCCTCCAT TCTGGAGGGC ATTGCTATGG TCGTCGAACA 3360

TATGTATACC GCCTACACTT ATGTGTACAC ACTCGGCGAT ACTGAAAGAA AATTAATGTT 3420

GGACATACAC ACGGTCCTCA CCGACAGCTG CCCGCCCAAA GACTCCGGAG TATCAGAAAA 3480

GCTACTGAGA ACATATTTGA TGTTCACATC AATGTGTACC AACATAGAGC TGGGCGAAAT 3540

GATCGCCCGC TTTTCCAAAC CGGACAGCCT TAACATCTAT AGGGCATTCT CCCCCTGCTT 3600

TCTAGGACTA AGGTACGATT TGCATCCAGC CAAGTTGCGC GCCGAGGCGC CGCAGTCGTC 3660

CGCTCTGACG CGGACTGCCG TTGCCAGAGG AACATCGGGA TTCGCAGAAT TGCTCCACGC 3720

GCTGCACCTC GATAGCTTAA ATTTAATTCC GGCGATTAAC TGTTCAAAGA TTACAGCCGA 3780

CAAGATAATA GCTACGGTAC CCTTGCCTCA CGTCACGTAT ATCATCAGTT CCGAAGCACT 3840

CTCGAACGCT GTTGTCTACG AGGTGTCGGA GATCTTCCTC AAGAGTGCCA TGTTTATATC 3900

TGCTATCAAA CCCGATTGCT CCGGCTTTAA CTTTTCTCAG ATTGATAGGC ACATTCCCAT 3960

AGTCTACAAC ATCAGCACAC CAAGAAGAGG TTGCCCCCTT TGTGACTCTG TAATCATGAG 4020

CTACGATGAG AGCGATGGCC TGCAGTCTCT CATGTATGTC ACTAATGAAA GGGTGCAGAC 4080

CAACCTCTTT TTAGATAAGT CACCTTTCTT TGATAATAAC AACCTACACA TTCATTATTT 4140

GTGGCTGAGG GACAACGGGA CCGTAGTGGA GATAAGGGGC ATGTATAGAA GACGCGCAGC 4200

CAGTGCTTTG TTTCTAATTC TCTCTTTTAT TGGGTTCTCG GGGGTTATCT ACTTTCTTTA 4260

CAGACTGTTT TCCATCCTTT ATTAGACGGT CAATAAAGCG TAGATTTTTA AAAGGTTTCC 4320

TGTGCATTCT TTTTGTATGG GCATATACTT GGCAAGAAAT CCGAGCACCT CAGAAAGTGG 4380

ATTGCCGTCA CATATCAGTT CGACCACCCC TGCACCTAGC CATGCGGCGC TTTGACGGTC 4440

TTTGGGGCTA CACATCATAA AGTACTTTTC CATGGCTTCT ATAAGCACCT TGGAACAATC 4500

FIGURE 3A-4

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TGGGGGTTGG CGAATGGGTT CCCTAAACGG GAAATCCTCT ATGGTATTCA GGCAGAAGAC   4560
CGCGTCCTCC ACCCGACGTT TGAGTCTTTC TAGCAGAGCG CCGAAGAACT CCCGCTCGTG   4620
TGTTTTCGCA GGGGCAAGTT CTGCGCCGTA CAGCGATGAG AAACACGACA CGATGTTTTC   4680
CAGCCCCATG CTGCGCAGCA ACACGTGCTT CAGGAACAGG TGTTGTAGCC GGTTCAGTTT   4740
TAGCTTGGGT AGAAAAGTTA TCGAGTTGTT AGCACGCTCC ATGATGGTAA CGGTGTTGAA   4800
GTCACAGACC GGGCTTTCTC CGAGTCTCGG CCGCCTGAGT CCAATCATGT AGAACATAGA   4860
CGCGGCCTCG TTGTCTGTGT TAAGTGACAC GATATCCCGT TCGCAAACCT GTGCGATGTT   4920
GTGTTTCAGT ATAGATCTGG TCTGACCGGC ACGGGGTGTT ATGGGGTGAC GCGGTAAAGG   4980
CGACTCTGGG TCAAACACCT TTATGCGGTT GGCGGCCTCG TCGATGACGA CACGCTTGTT   5040
CGCGGCGTGT ATGGGGACGC GACGGCATCC CGCTGGCAGA TCTATAATCT TAAAGTTGGT   5100
ATAAGACTGG TCGCTCGTTA TGGCCAGCCG GCACTCCGGT AGTATCTGCG TGTCCTCGAA   5160
TTCGTGGCCG CGTACGACTG GCTTGGAGTG CAGGTAAACG CCAAGAGATG CGGTCTCTTC   5220
GCCTACGCAC AAGTGGCTTC TTAACGCGTA GGGGTGCGGT GAGAGCATGA TCCGTAGCAA   5280
CGATAGTTCC GGGTGCCTAG CCGCGTAGAG TGGCAGGGTA GACGAGTCCG GAGTCCCAAA   5340
CTTTTCGAAC AACAGTGGCA TCGGGACTTC AGGATTAGAG ACTCCCACCA TGGCCGCCAC   5400
CGCCGGAGAG GTCAAGACGT GAAACACGCG CTCGCCTGTC GACAGGCGCG CCGCGCCCTC   5460
TACTAGACTA GCCTTCACGT CCGGAACTCG TAACATAGCT TAGACCAGCG GACGGACGCA   5520
ACGTACGCGG GGATCGGCTG GCGGTGTCTG CTCGTTGGAC GCGGCCGTTC GGTGGCGCCA   5580
GTGCAGGCCT AGTTTGCGAA TGGCGTGACG GACAATTTGT GGCTTTAGAG CGGCGAACCG   5640
ATGACCCGTG GTGGCGACGA ACGAAATGAA GTTTGCATTG CGGCCCAACT CGTCTAGCCT   5700
GGTCTTCTTG TTTCGGGCAT AGATTTTCGG GATTAGGTTA CACTTTTTAT ATCCCAGTAC   5760
TGCGCACTCG TGTTTGCTTT TAGTGTGACT GATTATCTTC TTTGAGAAGT CAAACAGGCC   5820
CCGGGCGGCG GCTCGCCTAA TGCAAGCCAC GTCAAGCCTG AGAAACGAAC AGCATTCCAC   5880
CAGACACTCC AGGAACCTTT TGTGTAGCGT CTGTATTTGG GAACGGTTTC TGTGCTCAAG   5940
TAGGGAGAAT ATTCTATTTT TGTTTCCGTC GATGCGCGCG TGCTGGTCCG TGAGAATGGG   6000
CGCCAGCTCG TGGCGAATCT GTTCCACAAG AGGCTGCCCG TACACTTTAG AAATCGTGGC   6060
TGTCGCGGCC TTAAACCAGG ACACGTTTAG CCCATCCTTG CTGGAGACCA CAGATGGAAA   6120
GTTTGTGGTC CAAAATACGT TTTTTCGCCC CATTCTCACC ATGTACTGGT TTTCCAGTCC   6180
GTGCAGGTCC AACGTGGAGT TCCAATTTGC TATCGATACA GGAAATATGT GCCTGATTGG   6240
CAGAAAGCAT TTCAGCGTAC CCATTGCGAA GAGAAAGTGC AGCATGTCCC CACTGATGTT   6300
GATGTTTATT GCGGTGCCTT GACACATGTT GTCGGAAAAA AACACGCTTA TGGTAAAAGA   6360
AGGTTCCTTT ACGGAGTACT TTCGTATAAC AAAATTGTTG GTCAATCTGG GGATGTTTAA   6420
AATAGTCTTT TGCAGGGTGT TAGGAACGTG GCAGCTTATC TTAGTGTTAA TCACCATGTT   6480
GGTGTTGAAT ATGGTGATCT TGAAGTTTTC CAAACTGACG TGTTTTGTGG GTTCCAGCAT   6540
GTCTGACACT GTAGAGCTGC CCAGAGTCCG CGCGTCCGTG GCCGCGTATC GTTGGAAGCA   6600
```

FIGURE 3A-5

```
CGCCTGCAAA TTTCCTTTCA TGGCTGCTCG CCGGTCTTTC GGCGCGTACC GGATTCTTGA   6660
AAGCGTCGCC GCCAGGAGAC GCGGTGTCTC GTGGGTGCCT AAAAAGTTTG CGCAGGGGTG   6720
CAGTCCGCTG CACGAGTGGC CGATGCAGTC TGCCACTGCC ATACACATGA CGAGTCTGTA   6780
GATGGCCGGT GTGCCCGGAT ACACTAGATA GTAGGTACAA TCTGGGGTAC TGACGACCAC   6840
CCTGTATGGC TTTGGTCCGG GGTCCTTGCG TTGGATTTTT ACGTGCAGAC GGGACACGAG   6900
CTGGTTTAGA GCCAGCTGAA AGCCCACCAG ATCCCGTCCG TTAACCTTGA CGTCCTGGTG   6960
CTTACTCTGT TTCGACAGGT TCTTCAGCAC GGTGGGCAGT CGCTCTACGT TGTGAGCGAT   7020
GGCACGGCGC AGCGAGACCA GCTCTCCGTG CCACCCCCAC GTGGCCATGA AGCTGCTGAT   7080
GTTAAACTTT AAAAAATGTA GCTGTGCGTC TGGGGATGCG GGTGGCATTA TTGAAAACGA   7140
GAGATGCTTC AGGCTCTCCA GGAGTGCAAA ATAATTTTGA TAGATTGTGG GTTGTAGACT   7200
ATGGGGCAAC ACCGCCAGAA ACGCATGAAA ACACTGTTCG AACTCCCAGA ACTCCAGGTA   7260
CCTGCACACT ATCCTGAACA TGGCTTTGTA ACATATGGTG CACGTTAGTA GCGCGGGAAG   7320
ATACAGCGAG CGTAGCTCCC TGAATTCGCA GGGTTTATCA CAATCATCGG TAAGTTCCCA   7380
TGATCCCACC GCAGGTAGGT AGTTGTCGGT GTCTATCTGT CCGCGCGTAA ACACTCCACC   7440
ACCGTCAATT ATTAAACCTT CGCCGCTGTA CCGTCGACCC ACTTTTCCCA AAAGAGTCCC   7500
TTCTTGATGT ATAAAAGGGT GGAGGCGTTC CCCCAGGAGT AGTCTGCGTA TCGCTCTGCA   7560
GGCGAAAAAG GTGGGCTCGG GCTGCATCAT CTTATCAAGA CCTTCTAAGG TCAGCTCTGC   7620
CTGCAGGTGC GAGTTGGTGG CCAGACAGCA GAATATTTCC AGCTGTGATT CCCAAGTCGC   7680
TTGATAACAC GTGGTCTGCG GACTCGTCGT CAGGGAGGCG CTCGGTGGCA GTAGTAGGGG   7740
GCCCTCGAGC GCTGCCATGG AGGCGACCTT GGAGCAACGA CCTTTCCCGT ACCTCGCCAC   7800
GGAGGCCAAC CTCCTAACGC AGATTAAGGA GTCGGCTGCC GACGGACTCT TCAAGAGCTT   7860
TCAGCTATTG CTCGGCAAGG ACGCCAGAGA AGGCAGTGTC CGTTTCGAAG CGCTACTGGG   7920
CGTATATACC AATGTGGTGG AGTTTGTTAA GTTTCTGGAG ACCGCCCTCG CCGCCGCTTG   7980
CGTCAATACC GAGTTCAAGG ACCTGCGGAG AATGATAGAT GGAAAAATAC AGTTTAAAAT   8040
TTCAATGCCC ACTATTGCCC ACGGAGACGG GAGGAGGCCC AACAAGCAGA GACAGTATAT   8100
CGTCATGAAG GCTTGCAATA AGCACCACAT CGGTGCGGAG ATTGAGCTTG CGGCCGCAGA   8160
CATCGAGCTT CTCTTCGCCG AGAAAGAGAC GCCCTTGGAC TTCACAGAGT ACGCGGGTGC   8220
CATCAAGACG ATTACGTCGG CTTTGCAGTT TGGTATGGAC GCCCTAGAAC GGGGGCTAGT   8280
GGACACGGTT CTCGCAGTTA AACTTCGGCA CGCTCCACCC GTCTTTATTT TAAAGACGCT   8340
GGGCGATCCC GTCTACTCTG AGAGGGGCCT CAAAAAGGCC GTCAAGTCTG ACATGGTATC   8400
CATGTTCAAG GCACACCTCA TAGAACATTC ATTTTTTCTA GATAAGGCCG AGCTCATGAC   8460
AAGGGGGAAG CAGTATGTCC TAACCATGCT CTCCGACATG CTGGCCGCGG TGTGCGAGGA   8520
TACCGTCTTT AAGGGTGTCA GCACGTACAC CACGGCCTCT GGGCAGCAGG TGGCCGGCGT   8580
CCTGGAGACG ACGGACAGCG TCATGAGACG GCTGATGAAC CTGCTGGGGC AAGTGGAAAG   8640
TGCCATGTCC GGGCCCGCGG CCTACGCCAG CTACGTTGTC AGGGGTGCCA ACCTCGTCAC   8700
```

FIGURE 3A-6

CGCCGTTAGC TACGGAAGGG CGATGAGAAA CTTTGAACAG TTTATGGCAC GCATAGTGGA 8760
CCATCCCAAC GCTCTGCCGT CTGTGGAAGG TGACAAGGCC GCTCTGGCGG ACGGACACGA 8820
CGAGATTCAG AGAACCCGCA TCGCCGCCTC TCTCGTCAAG ATAGGGGATA AGTTTGTGGC 8880
CATTGAAAGT TTGCAGCGCA TGTACAACGA GACTCAGTTT CCCTGCCCAC TGAACCGGCG 8940
CATCCAGTAC ACCTATTTCT TCCCTGTTGG CCTTCACCTT CCCGTGCCCC GCTACTCGAC 9000
ATCCGTCTCA GTCAGGGGCG TAGAATCCCC GGCCATCCAG TCGACCGAGA CGTGGGTGGT 9060
TAATAAAAAC AACGTGCCTC TTTGCTTCGG TTACCAAAAC GCCCTCAAAA GCATATGCCA 9120
CCCTCGAATG CACAACCCCA CCCAGTCAGC CCAGGCACTA AACCAAGCTT TTCCCGATCC 9180
CGACGGGGGA CATGGGTACG GTCTCAGGTA TGAGGAGACG CCAAACATGA ACCTATTCAG 9240
AACGTTCCAC CAGTATTACA TGGGGAAAAA CGTGGCATTT GTTCCCGATG TGGCCCAAAA 9300
AGCGCTCGTA ACCACGGAGG ATCTACTGCA CCCAACCTCT CACCGTCTCC TCAGATTGGA 9360
GGTCCACCCC TTCTTTGATT TTTTTGTGCA CCCCTGTCCT GGAGCGAGAG GATCGTACCG 9420
CGCCACCCAC AGAACAATGG TTGGAAATAT ACCACAACCG CTCGCTCCAA GGGAGTTTCA 9480
GGAAAGTAGA GGGGCGCAGT TCGACGCTGT GACGAATATG ACACACGTCA TAGACCAGCT 9540
AACTATTGAC GTCATACAGG AGACGGCATT TGACCCCGCG TATCCCCTGT TCTGCTATGT 9600
AATCGAAGCA ATGATTCACG GACAGGAAGA AAAATTCGTG ATGAACATGC CCCTCATTGC 9660
CCTGGTCATT CAAACCTACT GGGTCAACTC GGGAAAACTG GCGTTTGTGA ACAGTTATCA 9720
CATGGTTAGA TTCATCTGTA CGCATATTGG GAATGGAAGC ATCCCTAAGG AGGCGCACGG 9780
CCACTACCGG AAAATCTTAG GCGAGCTCAT CGCCCTTGAG CAGGCGCTTC TCAAGCTCGC 9840
GGGACACGAG ACGGTGGGTC GGACGCCGAT CACACATCTG GTTTCGGCTC TCCTCGACCC 9900
GCATCTGCTG CCTCCCTTTG CCTACCACGA TGTCTTTACG GATCTTATGC AGAAGTCATC 9960
CAGACAACCC ATAATCAAGA TCGGGGATCA AAACTACGAC AACCCTCAAA ATAGGGCGAC 10020
ATTCATCAAC CTCAGGGGTC GCATGGAGGA CCTAGTCAAT AACCTTGTTA ACATTTACCA 10080
GACAAGGGTC AATGAGGACC ATGACGAGAG ACACGTCCTG GACGTGGCGC CCCTGGACGA 10140
GAATGACTAC AACCCGGTCC TCGAGAAGCT ATTCTACTAT GTTTTAATGC CGGTGTGCAG 10200
TAACGGCCAC ATGTGCGGTA TGGGGGTCGA CTATCAAAAC GTGGCCCTGA CGCTGACTTA 10260
CAACGGCCCC GTCTTTGCGG ACGTCGTGAA CGCACAGGAT GATATTCTAC TGCACCTGGA 10320
GAACGGAACC TTGAAGGACA TTCTGCAGGC AGGCGACATA CGCCCGACGG TGGACATGAT 10380
CAGGGTGCTG TGCACCTCGT TTCTGACGTG CCCTTTCGTC ACCCAGGCCG CTCGCGTGAT 10440
CACAAAGCGG GACCCGGCCC AGAGTTTTGC CACGCACGAA TACGGGAAGG ATGTGGCGCA 10500
GACCGTGCTT GTTAATGGCT TTGGTGCGTT CGCGGTGGCG GACCGCTCTC GCGAGGCGGC 10560
GGAGACTATG TTTTATCCGG TACCCTTTAA CAAGCTCTAC GCTGACCCGT TGGTGGCTGC 10620
CACACTGCAT CCGCTCCTGC CAAACTATGT CACCAGGCTC CCCAACCAGA GAAACGCGGT 10680
GGTCTTTAAC GTGCCATCCA ATCTCATGGC AGAATATGAG GAATGGCACA AGTCGCCCGT 10740
CGCGGCGTAT GCCGCGTCTT GTCAGGCCAC CCCGGGCGCC ATTAGCGCCA TGGTGAGCAT 10800

FIGURE 3A-7

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GCACCAAAAA CTATCTGCCC CCAGTTTCAT TTGCCAGGCA AAACACCGCA TGCACCCTGG   10860
TTTTGCCATG ACAGTCGTCA GGACGGACGA GGTTCTAGCA GAGCACATCC TATACTGCTC   10920
CAGGGCGTCG ACATCCATGT TTGTGGGCTT GCCTTCGGTG GTACGGCGCG AGGTACGTTC   10980
GGACGCGGTG ACTTTTGAAA TTACCCACGA GATCGCTTCC CTGCACACCG CACTTGGCTA   11040
CTCATCAGTC ATCGCCCCGG CCCACGTGGC CGCCATAACT ACAGACATGG GAGTACATTG   11100
TCAGGACCTC TTTATGATTT TCCCAGGGGA CGCGTATCAG GACCGCCAGC TGCATGACTA   11160
TATCAAAATG AAAGCGGGCG TGCAAACCGG CTCACCGGGA AACAGAATGG ATCACGTGGG   11220
ATACACTGCT GGGGTTCCTC GCTGCGAGAA CCTGCCCGGT TTGAGTCATG GTCAGCTGGC   11280
AACCTGCGAG ATAATTCCCA CGCCGGTCAC ATCTGACGTT GCCTATTTCC AGACCCCCAG   11340
CAACCCCCGG GGGCGTGCGG CGTCGGTCGT GTCGTGTGAT GCTTACAGTA ACGAAAGCGC   11400
AGAGCGTTTG TTCTACGACC ATTCAATACC AGACCCCGCG TACGAATGCC GGTCCACCAA   11460
CAACCCGTGG GCTTCGCAGC GTGGCTCCCT CGGCGACGTG CTATACAATA TCACCTTTCG   11520
CCAGACTGCG CTGCCGGGCA TGTACAGTCC TTGTCGGCAG TTCTTCCACA AGGAAGACAT   11580
TATGCGGTAC AATAGGGGGT TGTACACTTT GGTTAATGAG TATTCTGCCA GGCTTGCTGG   11640
GGCCCCCGCC ACCAGCACTA CAGACCTCCA GTACGTCGTG GTCAACGGTA CAGACGTGTT   11700
TTTGGACCAG CCTTGCCATA TGCTGCAGGA GGCCTATCCC ACGCTCGCCG CCAGCCACAG   11760
AGTTATGCTT GCCGAGTACA TGTCAAACAA GCAGACACAC GCCCCAGTAC ACATGGGCCA   11820
GTATCTCATT GAAGAGGTGG CGCCGATGAA GAGACTATTA AAGCTCGGAA ACAAGGTGGT   11880
GTATTAGCTA ACCCTTCTAG CGTTGGCTAG TCATGGCACT CGACAAGAGT ATAGTGGTTA   11940
ACTTCACCTC CAGACTCTTC GCTGATGAAC TGGCCGCCCT TCAGTCAAAA ATAGGGAGCG   12000
TACTGCCGCT CGGAGATTGC CACCGTTTAC AAAATATACA GGCATTGGGC CTGGGGTGCG   12060
TATGCTCACG TGAGACATCT CCGGACTACA TCCAAATTAT GCAGTATCTA TCCAAGTGCA   12120
CACTCGCTGT CCTGGAGGAG GTTCGCCCGG ACAGCCTGCG CCTAACGCGG ATGGATCCCT   12180
CTGACAACCT TCAGATAAAA AACGTATATG CCCCCTTTTT TCAGTGGGAC AGCAACACCC   12240
AGCTAGCAGT GCTACCCCCA TTTTTTAGCC GAAAGGATTC CACCATTGTG CTCGAATCCA   12300
ACGGATTTGA CCCCGTGTTC CCCATGGTCG TGCCGCAGCA ACTGGGGCAC GCTATTCTGC   12360
AGCAGCTGTT GGTGTACCAC ATCTACTCCA AAATATCGGC CGGGGCCCCG GATGATGTAA   12420
ATATGGCGGA ACTTGATCTA TATACCACCA ATGTGTCATT TATGGGGCGC ACATATCGTC   12480
TGGACGTAGA CAACACGGAT CCACGTACTG CCCTGCGAGT GCTTGACGAT CTGTCCATGT   12540
ACCTTTGTAT CCTATCAGCC TTGGTTCCCA GGGGGTGTCT CCGTCTGCTC ACGGCGCTCG   12600
TGCGGCACGA CAGGCATCCT CTGACAGAGG TGTTTGAGGG GGTGGTGCCA GATGAGGTGA   12660
CCAGGATAGA TCTCGACCAG TTGAGCGTCC CAGATGACAT CACCAGGATG CGCGTCATGT   12720
TCTCCTATCT TCAGAGTCTC AGTTCTATAT TTAATCTTGG CCCCAGATTG CACGTGTATG   12780
CCTACTCGGC AGAGACTTTG GCGGCCTCCT GTTGGTATTC CCCACGCTAA CGATTTGAAG   12840
CGGGGGGGGT ATGGCGTCAT CTGATATTCT GTCGGTTGCA AGGACGGATG ACGGCTCCGT   12900
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FIGURE 3A-8

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CTGTGAAGTC TCCCTGCGTG GAGGTAGGAA AAAAACTACC GTCTACCTGC CGGACACTGA   12960
ACCCTGGGTG GTAGAGACCG ACGCCATCAA AGACGCCTTC CTCAGCGACG GGATCGTGGA   13020
TATGGCTCGA AAGCTTCATC GTGGTGCCCT GCCCTCAAAT TCTCACAACG GCTTGAGGAT   13080
GGTGCTTTTT TGTTATTGTT ACTTGCAAAA TTGTGTGTAC CTAGCCCTGT TTCTGTGCCC   13140
CCTTAATCCT TACTTGGTAA CTCCCTCAAG CATTGAGTTT GCCGAGCCCG TTGTGGCACC   13200
TGAGGTGCTC TTCCCACACC CGGCTGAGAT GTCTCGCGGT TGCGATGACG CGATTTTCTG   13260
TAAACTGCCC TATACCGTGC CTATAATCAA CACCACGTTT GGACGCATTT ACCCGAACTC   13320
TACACGCGAG CCGGACGGCA GGCCTACGGA TTACTCCATG GCCCTTAGAA GGGCTTTTGC   13380
AGTTATGGTT AACACGTCAT GTGCAGGAGT GACATTGTGC CGCGGAGAAA CTCAGACCGC   13440
ATCCCGTAAC CACACTGAGT GGGAAAATCT GCTGGCTATG TTTTCTGTGA TTATCTATGC   13500
CTTAGATCAC AACTGTCACC CGGAAGCACT GTCTATCGCG AGCGGCATCT TTGACGAGCG   13560
TGACTATGGA TTATTCATCT CTCAGCCCCG GAGCGTGCCC TCGCCTACCC CTTGCGACGT   13620
GTCGTGGGAA GATATCTACA ACGGGACTTA CCTAGCTCGG CCTGGAAACT GTGACCCCTG   13680
GCCCAATCTA TCCACCCCTC CCTTGATTCT AAATTTTAAA TAAAGGTGTG TCACTGGTTA   13740
CACCACGATT AAAAACCACT CACTGAGATG TCTTTTTAAC CGCTAAGGGA TTATACCGGG   13800
ATTTAAAACC GCCCACTGAT TTTTTTACGC TAAGAGTTGG GTGCTTGGGG GGTTTTGCAT   13860
TGCTCTGTTG TAAACTATAT ATAAGTTAAA CCAAAATTCG CAGGGAGACA AGGTGACGGT   13920
GGTGAGAACT CAGTTGAGAG TCAGAGAATA CAGTGCTAAT CAGGGTAGAT GAGCATGACT   13980
TTCCCCGTCT CCAGTCACCG GAGGAATGGT GGACGGCTCC GTCCTGGTGC GAATGGCCAC   14040
CAAGCCTCCC GTGATTGGTC TTATAACAGT GCTCTTCCTC CTAGTCATAG GCGCCTGCGT   14100
CTACTGCTGC ATTCGCGTGT TCCTGGCGGC TCGACTGTGG CGCGCCACCC CACTAGGCAG   14160
GGCCACCGTG GCGTATCAGG TCCTTCGCAC CCTGGGACCG CAGGCCGGGT CACATGCACC   14220
GCCGACGGTG GGCATAGCTA CCCAGGAGCC CTACCGTACA ATATACATGC CAGATTAGAA   14280
CGGGGTGTGT GCTATAATGG ATGGCTATGG GGGGGGGCTG TAGATAATTG AGCGCTGTGC   14340
TTTTATTGTG GGGATATGGG CTTGTACATG TGTCTATCAT CGGTAGCCAT AAAATGGGCC   14400
ATGACAACTG CCACAAGTAA GTCGTCCGAC ATGTGCTTTT GCTTGGCGCT GTATGACTGC   14460
CCTCCATCCC TAAGCGGGAC GCACTTGATC GCGCGGACCT GTTCTACCAG GTAGGTCACC   14520
GGGTCAAATG ATATTTTGAT GGTGTTGGAC ACCACCGTCT GGCTGGCGCT CAGGGTGCCG   14580
GAGTTCAGAG CGTAGATGAA TGTCTCAAAC GCGGAGGATT TCTCGCCTCC CAACATGTAA   14640
ATTGGCCACT GCAGGGCGCT GCTCTTGTCA GTATAGTGTA GAAAATGTAT GGGGAGCGGG   14700
CATATTTCGT TAAGGACGGT TGCAATGGCC ACCCCAGAAT CTTGGCTGCT GTTGCCTTCG   14760
ACCGCCGCGT TCACGCGCTC AATTGTGGTG TGGAGCACAG CGATCGCCTT AATCATCGTG   14820
CATGCGCAGG ACGCTATCTC GTAAGCAGCT GCGCCAGTGA GGTCGCGCAG GAAGAAATGC   14880
TCCATGCCCA ATATGAGGCT TCTGGTGGGA GTCTGAGTAC TCGTGACAAC GGCGCCCACG   14940
CCAGTACCGG ACGCCTCCGT GTTGTTCGTA TACGCGGGGT CGATGTAAAC AAACAGCTGT   15000
```

FIGURE 3A-9

```
TTTCCAAGGC ACTTCTGAAC CTCCTGGGCG GTGGTGTCTA CCCGACACAT GTCAAACTGT   15060
GTCAGCGCTG CGTCACCCAC CACGCGGTAA AGCGTAGCAT TTGACGACGC TGCTCCCTCG   15120
CCCATTAGTT CGGTGTCGAA TGCCCCCTCC ATAAAGAGGT TGGTGGTGGT TTTGATGGAT   15180
TCGTCGATGG TGATGTACGT CGGAATGTGC AGTCTGTAAC AAGGACAGGA CACTAGTGCG   15240
TCTTGCAGGT GGAAATCTTC TCGGTGGTCC GCACACACGT AACTGACCAC ATTCAGCATC   15300
TTTTCCTGGG CGTTCCTGAG GTTAAGCAGG AAACTCGTGG AGCGGTCTGA CGAGTTCACG   15360
GATGATATAA ATATAAGCTT GGCGTCTTTC TGAAGCATGA AACCCAGAAT AGCCGGCAGT   15420
GCATCCTTTT TAATAAAATT CGCCTCGTCT ACGTAGAGCA GGTTAAAGGT CTGTCCCGA    15480
ATGCTCTGCA GACACGGAAA GACACAAAAG AGGGGCTCAT AAGCGGCTAA CAGTAAAGGA   15540
GAGGAGGCGA ACAGTGCGTG GCTCTTGGTT CTTGGGAATA AAAGGGGGCG TGTGTGCCGA   15600
TCGATCGTAT GGGTGAGCCA GTGGATCCTG GACATGTGGT GAATGAGAAA GATTTTGAGG   15660
AGTGTGAACA ATTTTTCAGT CAACCCCTTA GGGAGCAAGT GGTCGCGGGG GTCAGGGCAC   15720
TCGACGGCCT CGGTCTCGCT GACTCTCTAT GTCACAAAAC AGAAAGACTC TGCCTGCTGA   15780
TGGACCTGGT GGGCACGGAG TGCTTTGCGA GGGTGTGCCG CCTAGACACC GGTGCGAAAT   15840
GAAGAGTGTG GCGAGTCCCT TATGTCAGTT CCACGGCGTG TTTTGCCTGT ACCAGTGTCG   15900
CCAGTGCCTG GCATACCACG TGTGTGATGG GGGCGCCGAA TGCGTTCTCC TGCATACGCC   15960
GGAGAGCGTC ATCTGCGAAC TAACGGGTAA CTGCATGCTC GGCAACATTC AAGAGGGCCA   16020
GTTTTTAGGG CCGGTACCGT ATCGGACTTT GGATAACCAG GTTGACAGGG ACGCATATCA   16080
CGGGATGCTA GCGTGTCTGA AACGGGACAT TGTGCGGTAT TTGCAGACAT GGCCGGACAC   16140
CACCGTAATC GTGCAGGAAA TAGCCCTGGG GGACGGCGTC ACCGACACCA TCTCGGCCAT   16200
TATAGATGAA ACATTCGGTG AGTGTCTTCC CGTACTGGGG GAGGCCCAAG GCGGGTACGC   16260
CCTGGTCTGT AGCATGTATC TGCACGTTAT CGTCTCCATC TATTCGACAA AAACGGTGTA   16320
CAACAGTATG CTATTTAAAT GCACAAAGAA TAAAAAGTAC GACTGCATTG CCAAGCGGGT   16380
GCGGACAAAA TGGATGCGCA TGCTATCAAC GAAAGATACG TAGGTCCTCG CTGCCACCGT   16440
TTGGCCCACG TGGTGCTGCC TAGGACGTTT CTGCTGCATC ACGCCATACC CCTGGAGCCC   16500
GAGATCATCT TTTCCACCTA CACCCGGTTC AGCCGGTCGC CAGGGTCATC CCGCCGGTTG   16560
GTGGTGTGTG GGAAACGTGT CCTGCCAGGG GAGGAAAACC AACTTGCGTC TTCACCTTCT   16620
GGTTTGGCGC TTAGCCTGCC TCTGTTTTCC CACGATGGGA ACTTTCATCC ATTTGACATC   16680
TCGGTACTGC GCATTTCCTG CCCTGGTTCT AATCTTAGTC TTACTGTCAG ATTTCTCTAT   16740
CTATCTCTGG TGGTGGCTAT GGGGGCGGGA CGGAATAATG CGCGGAGTCC GACCGTTGAC   16800
GGGGTATCGC CGCCAGAGGG CGCCGTAGCC CACCCTTTGG AGGAACTGCA GAGGCTGGCG   16860
CGTGCTACGC CGGACCCGGC ACTCACCCGT GGACCGTTGC AGGTCCTGAC CGGCCTTCTC   16920
CGCGCAGGGT CAGACGGAGA CCGCGCCACT CACCACATGG CGTTCGAGGC TCCGGGAACC   16980
GTGCGTGGAG AAAGCCTAGA CCCGCCTGTT TCACAGAAGG GGCCAGCGCG CACACGCCAC   17040
AGGCCACCCC CCGTGCGACT GAGCTTCAAC CCCGTCAATG CCGATGTACC CGCTACCTGG   17100
```

FIGURE 3A-10

```
CGAGACGCCA CTAACGTGTA CTCGGGTGCT CCCTACTATG TGTGTGTTTA CGAACGCGGT   17160
GGCCGTCAGG AAGACGACTG GCTGCCGATA CCACTGAGCT TCCCAGAAGA GCCCGTGCCC   17220
CCGCCACCGG GCTTAGTGTT CATGGACGAC TTGTTCATTA ACACGAAGCA GTGCGACTTT   17280
GTGGACACGC TAGAGGCCGC CTGTCGCACG CAAGGCTACA CGTTGAGACA GCGCGTGCCT   17340
GTCGCCATTC CTCGCGACGC GGAAATCGCA GACGCAGTTA AATCGCACTT TTTAGAGGCG   17400
TGCCTAGTGT TACGGGGGCT GGCTTCGGAG GCTAGTGCCT GGATAAGAGC TGCCACGTCC   17460
CCGCCCCTTG GCCGCCACGC CTGCTGGATG GACGTGTTAG GATTATGGGA AAGCCGCCCC   17520
CACACTCTAG GTTTGGAGTT ACGCGGCGTA AACTGTGGCG GCACGGACGG TGACTGGTTA   17580
GAGATTTTAA AACAGCCCGA TGTGCAAAAG ACAGTCAGCG GGAGTCTTGT GGCATGCGTG   17640
ATCGTCACAC CCGCATTGGA AGCCTGGCTT GTGTTACCTG GGGGTTTTGC TATTAAAGCC   17700
CGCTATAGGG CGTCGAAGGA GGATCTGGTG TTCATTCGAG GCCGCTATGG CTAGCCGGAG   17760
GCGCAAACTT CGGAATTTCC TAAACAAGGA ATGCATATGG ACTGTTAACC CAATGTCAGG   17820
GGACCATATC AAGGTCTTTA ACGCCTGCAC CTCTATCTCG CCGGTGTATG ACCCTGAGCT   17880
GGTAACCAGC TACGCACTGA GCGTGCCTGC TTACAATGTG TCTGTGGCTA TCTTGCTGCA   17940
TAAAGTCATG GGACCGTGTG TGGCTGTGGG AATTAACGGA GAAATGATCA TGTACGTCGT   18000
AAGCCAGTGT GTTTCTGTGC GGCCCGTCCC GGGGCGCGAT GGTATGGCGC TCATCTACTT   18060
TGGACAGTTT CTGGAGGAAG CATCCGGACT GAGATTTCCC TACATTGCTC CGCCGCCGTC   18120
GCGCGAACAC GTACCTGACC TGACCAGACA AGAATTAGTT CATACCTCCC AGGTGGTGCG   18180
CCGCGGCGAC CTGACCAATT GCACTATGGG TCTCGAATTC AGGAATGTGA ACCCTTTTGT   18240
TTGGCTCGGG GGCGGATCGG TGTGGCTGCT GTTCTTGGGC GTGGACTACA TGGCGTTCTG   18300
TCCGGGTGTC GACGGAATGC CGTCGTTGGC AAGAGTGGCC GCCCTGCTTA CCAGGTGCGA   18360
CCACCCAGAC TGTGTCCACT GCCATGGACT CCGTGGACAC GTTAATGTAT TTCGTGGGTA   18420
CTGTTCTGCG CAGTCGCCGG GTCTATCTAA CATCTGTCCC TGTATCAAAT CATGTGGGAC   18480
CGGGAATGGA GTGACTAGGG TCACTGGAAA CAGAAATTTT CTGGGTCTTC TGTTCGATCC   18540
CATTGTCCAG AGCAGGGTAA CAGCTCTGAA GATAACTAGC CACCCAACCC CCACGCACGT   18600
CGAGAATGTG CTAACAGGAG TGCTCGACGA CGGCACCTTG GTGCCGTCCG TCCAAGGCAC   18660
CCTGGGTCCT CTTACGAATG TCTGACTACT TCAGCCGCTT GCTGATATAT GAGTGTAAAA   18720
AACTTAAGGC CCTGGGCTTA CGTTCTTATT GAAGCATGTT GCGCACATCA GCGAGCTGGA   18780
CCGTCCTCCG GGTCGCGTGT AGATTATGGT TCCGTTCTCC TTCTTGATGT TTAAATTTTT   18840
GGGGGGGAAC CACCGACAAA GCGTCTTTAT GATTTCCGCG AACACGGAGT TGGCTACGTG   18900
CTTTTGGTGG GCTACGTACC CAATGTTAAT GTTCTCTACG GATGCCAGTA GCATGCTGAT   18960
GATCGCCACC ACTATCCATG TCTTTCCGTG TCTCCTTGGT ATTAGGAATA CGCTTGCCTT   19020
TTGCTTAAAC GTCTGTAAAA CACTGTTTGG AGTTTCAAAT AAACCGAAGT ACTGCTTAAA   19080
CAATCCAAAC AACTGGTGCG TCTTTTGTGG GGCCTTGATT GAAACCAAAA AGAAAAAAGT   19140
GTGCATTACT AGCTGCTGTT GGAAGGGCTC CAGCCAGTGC ACCCCGGGAA CGTAACAGCC   19200
```

FIGURE 3A-11

```
GTTCAGAAAG GACGAAAGGT TAACCAGAAA AGCCTGAAGT TCGCGGTAGA CAGAGCAGGC   19260
GTGCAGGGAG TCGTGTGTTT TTCTGCCCGC CTGGTACTCG ACCAGTTGAT CGGCCGTGGA   19320
GACGTGCGCG TCCTCGCGCA CACACCGCAT CTGCAAGTAT GTTGATAGGG ACTCCAATAG   19380
GCGCGGCTTT GCGGGGACGT TGTCCTCGGA CGGTCTGGGG GTTCCCACGT CGGGATTTGC   19440
TGACGTGGGC GTGGCGGGAT GGTGCCGTGT GCAGTATGTT TCCAGGACCG AACTGTATGA   19500
GTTTATTCTG TGCACCACGC CAATAAAAGG GTGCGCCATC CGTGCCGTTT TGGGACAGTG   19560
TCGCGTGAAT GTCGGGGCAC TCAGTTCCCA CCTCTCTCCG GCGTCTTTGG CGGTCTCCTC   19620
CAGGTTGGCG GCAAGGCGCT CCCTGTGACG GCTGAGCAGC ATGTTTGCTT TGAGCTCGCT   19680
CGTGTCCGAG GGTGACCCGG AGGTGACCAG TAGGTACGTC AAGGGCGTAC AACTTGCCCT   19740
GGACCTTAGC GAGAACACAC CTGGACAATT TAAGTTGATA GAAACTCCCC TGAACAGCTT   19800
CCTCTTGGTT TCCAACGTGA TGCCCGAGGT CCAGCCAATC TGCAGTGGCC GGCCGGCCTT   19860
GCGGCCAGAC TTTAGTAATC TCCACTTGCC TAGACTGGAG AAGCTCCAGA GAGTCCTCGG   19920
GCAGGGTTTC GGGGCGGCGG GTGAGGAAAT CGCACTGGAC CCGTCTCACG TAGAAACACA   19980
CGAAAAGGGC CAGGTGTTCT ACAACCACTA TGCTACCGAG GAGTGGACGT GGGCTTTGAC   20040
TCTGAATAAG GATGCGCTCC TTCGGGAGGC TGTAGATGGC CTGTGTGACC CCGGAACTTG   20100
GAAGGGTCTT CTTCCTGACG ACCCCCTTCC GTTGCTATGG CTGCTGTTCA ACGGACCCGC   20160
CTCTTTTTGT CGGGCCGACT GTTGCCTGTA CAAGCAGCAC TGCGGTTACC CGGGCCCGGT   20220
GCTACTTCCA GGTCACATGT ACGCTCCCAA ACGGGATCTT TTGTCGTTCG TTAATCATGC   20280
CCTGAAGTAC ACCAAGTTTC TATACGGAGA TTTTTCCGGG ACATGGGCGG CGGCTTGCCG   20340
CCCGCCATTC GCTACTTCTC GGATACAAAG GGTAGTGAGT CAGATGAAAA TCATAGATGC   20400
TTCCGACACT TACATTTCCC ACACCTGCCT CTTGTGTCAC ATATATCAGC AAAATAGCAT   20460
AATTGCGGGT CAGGGGACCC ACGTGGGTGG AATCCTACTG TTGAGTGGAA AAGGGACCCA   20520
GTATATAACA GGCAATGTTC AGACCCAAAG GTGTCCAACT ACGGGCGACT ATCTAATCAT   20580
CCCATCGTAT GACATACCGG CGATCATCAC CATGATCAAG GAGAATGGAC TCAACCAACT   20640
CTAAAAGAGA GTTTATTAAG TCGGCTCTGG AGGCCAACAT CAACAGGAGG GCAGCTGTAT   20700
CGCTATTTGA                                                          20710
```

FIGURE 3B

SEQ. ID. NO. 36

```
GGATCCCTCT GACAACCTTC AGATAAAAAA CGTATATGCC CCCTTTTTTC AGTGGGACAG   60
CAACACCCAG CTAGCAGTGC TACCCCCATT TTTTAGCCGA AAGGATTCCA CCATTGTGCT  120
CGAATCCAAC GGATTTGACC CCGTGTTCCC CATGGTCGTG CCGCAGCAAC TGGGGCACGC  180
TATTCTGCAG CAGCTGTTGG TGTACCACAT CTACTCCAAA ATATCGGCCG GGGCCCCGGA  240
TGATGTAAAT ATGGCGGAAC TTGATCTATA TACCACCAAT GTGTCATTTA TGGGGCGCAC  300
ATATCGTCTG GACGTAGACA ACACGGATCC                                   330
```

FIGURE 3C

SEQ. ID. NO. 37

```
GGATCCGCTG GCAGGTGGGC GCGCACCTCG TCGGGTAGCT TGGAGACAAA CAGCTCCAGG     60
CCAGTCCGCG CCGTAGCGCC TGCAGGTGCC TCACCACCGG GGCCGGGTCA TGCGATCTGT    120
TTAGTCCGGA GAAGATAGGG CCCTTGGGAA GCCGCTGAAC CAGCTCCAGG GTCTCCAAGA    180
TGCGCACCGG TTGTCGGAGC TGTCGCGATA GAGGTTAGGG TAGGTGTCCG GTCCGTCCGT    240
GGGCTCAAAC CTGCCCAGAC ACACCACTGT CTGCTGGGGG ATCATCCTTC TCAGGGAGAT    300
GCATTCTTTG GAAGTAGTGG TAGAGATGGA GCAGACTGCC AGGGCGTTGC AGGAGTGGTG    360
GCGATGGTGC GCACCGTTTT TAAGAAACCC CCCAGGGTGG GGACTCCCGC TCCCTGCAGC    420
ATCTCGGCCT GCTGTACGTC CTTGGCGAAT ATGCGACGAA ATCGGCTGTG CGCACGGGGT    480
CCCAGGGCCG GTCCGGTGGC ATACAGGCCG GTGAGGGCCC CCTGGGTCTG TCCGCCTGGA    540
AACAGGGTGC TGTGAAACAA CAGGTTGCAA GGCCGCGAAT ACCCCTCTGC ACGCTGCTGT    600
GGACGTGGGT GTATGCTCCG TGGATCC                                        627
```

FIGURE 3D

SEQ. ID. NO. 38

```
AGCCGAAAGG ATTCCACCAT TGTGCTCGAA TCCAACGGAT TTGACCCCGT GTTCCCCATG   60
GTCGTGCCGC AGCAACTGGG GCACGCTATT CTGCAGCAGC TGTTGGTGTA CCACATCTAC  120
TCCAAAATAT CGGCCGGGGC CCCGGATGAT GTAAATATGG CGGAACTTGA TCTATATACC  180
ACCAATGTGT CATTTATGGG GCGCACATAT CGTCTGGACG TAGACAACAC GGA          233
```

FIGURE 3E

SEQ. ID. NO. 39

```
GAAATTACCC ACGAGATCGC TTCCCTGCAC ACCGCACTTG GCTACTCATC AGTCATCGCC   60
CCGGCCCACG TGGCCGCCAT AACTACAGAC ATGGGAGTAC ATTGTCAGGA CCTCTTTATG  120
ATTTTCCCAG GGGACGCGTA TCAGGACCGC CAGCTGCATG ACTATATCAA AATGAAAGCG  180
GGCGTGCAAA CCGGCTCACC GGGAAACAGA ATGGATCACG TGGGATACAC TGCTGGGGTT  240
CCTCGCTGCG AGAACCTGCC CGGTTTGAGT CATGGTCAGC TGGCAACCTG CGAGATAATT  300
CCCACGCCGG TCACATCTGA CGTTGCCT                                      328
```

FIGURE 3F

SEQ. ID. NO. 40

```
AACACGTCAT GTGCAGGAGT GACATTGTGC CGCGGAGAAA CTCAGACCGC ATCCCGTAAC   60
CACACTGAGT GGGAAAATCT GCTGGCTATG TTTTCTGTGA TTATCTATGC CTTAGATCAC  120
AACTGTCACC CG                                                      132
```

FIGURE 4A

FIGURE 4B

FIGURE 5

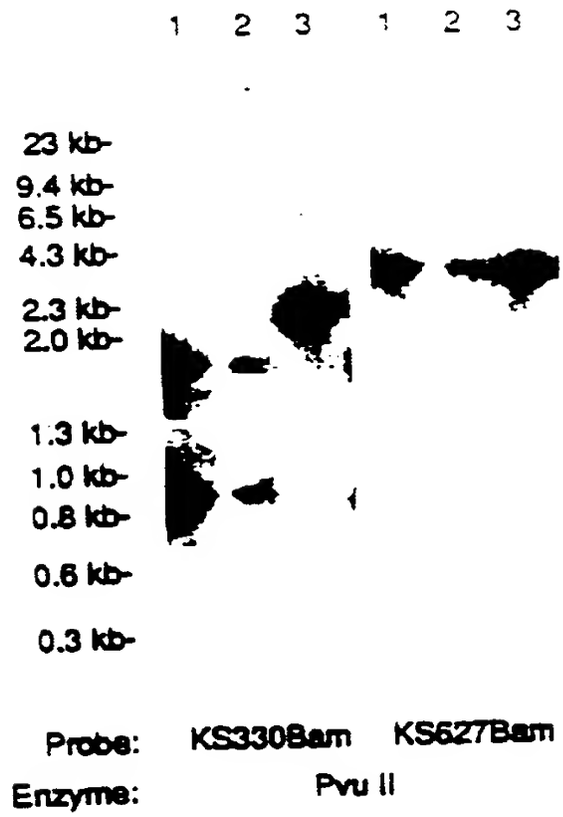


FIGURE 6

```
      1                                                               50
HSVSA MLTDKTIIVS LTSRLFADEI TKLQKKIGSI LPLQDPHKLQ SLDTLGLNAV
   KS MALDKSIVVN FTSRLFADEL AALQSKIGSV LPLGDCHRLQ NIQALGLGCV
  EBV ..MDLKVVVS LSSRLYTDEI AKMQQRIGCI LPLASTHGTQ NVQGLGLGQV

      51                                                             100
HSVSA CSRDVFPDYV HMFSYLSKCT LAILEEVNPD NLILTRLDPS ETYQIKNVYE
   KS CSRETSPDYI QIMQYLSKCT LAVLEEVRPD SLRLTRMDPS DNLQIKNVYA
  EBV YSLETVPDYV SMYNYLSDCT LAVLDEVSVD SLILTKIVPG QTYAIKNKYQ

      101                                                            150
HSVSA PMFQWDGFSN LTVIPPVFGR QQATVTLESN GFDLVFPSVV PSDLAQAIIG
   KS PFFQWDSNTQ LAVLPPFFSR KDSTIVLESN GFDPVFPMVV PQQLGHAILQ
  EBV PFFQWHGTGS LSVMPPVFGR EHATVKLESN DVDIVFPMVL PTPIAEEVLQ

      151                                                            200
HSVSA KLLLYNLYSR LVESDP.EIN IEEVNMYTTN VTHMGRHYVL DINHNNPNEA
   KS QLLVYHIYSK ISAGAPDDVN MAELDLYTTN VSFMGRTYRL DVDNTDPRTA
  EBV KILLFNVYSR VVMQAPGNAD MLDVHMHLGS VSYLGHHYEL ALPEVPGPLG

      201                                                            250
HSVSA LKSLDDLAVY TCILSALIPR ACLRVLTILM RHDQHELLDV FRGIVPREVY
   KS LRVLDDLSMY LCILSALVPR GCLRLLTALV RHDRHPLTEV FEGVVPDEVT
  EBV LALLDNLSLY FCIMVTLLPR ASMRLVRGLI RHEHHDLLNL FQEMVPDEIA

      251                                                            300
HSVSA EIDANALSIG DDITRMTTFI TYLQSLSSIF NLGAKLHLSS YASETQTATC
   KS RIDLDQLSVP DDITRMRVMF SYLQSLSSIF NLGPRLHVYA YSAETLAASC
  EBV RIDLDDLSVA DDLSRMRVMM TYLQSLASLF NLGPRLATAA YSQETLTATC

      301
HSVSA WISYC
   KS WYSPR
  EBV WLR
```

FIGURE 7

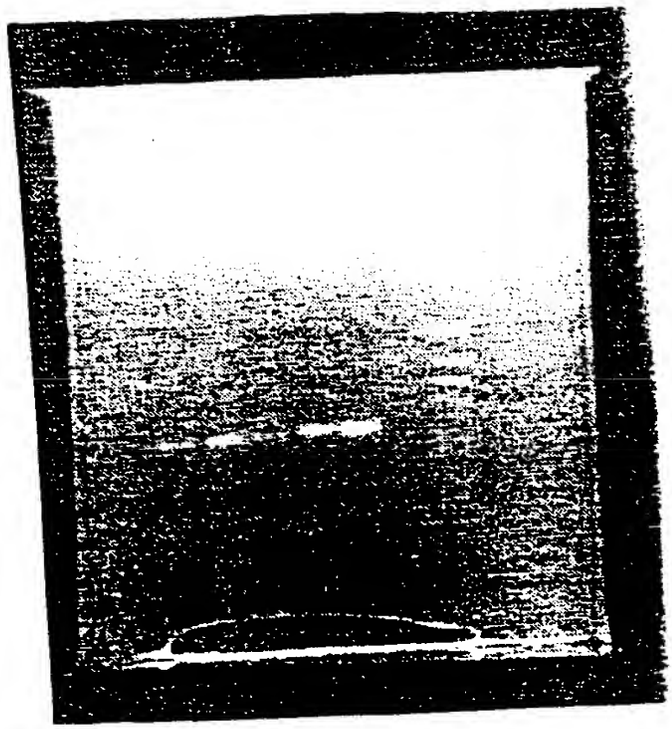


FIGURE 8

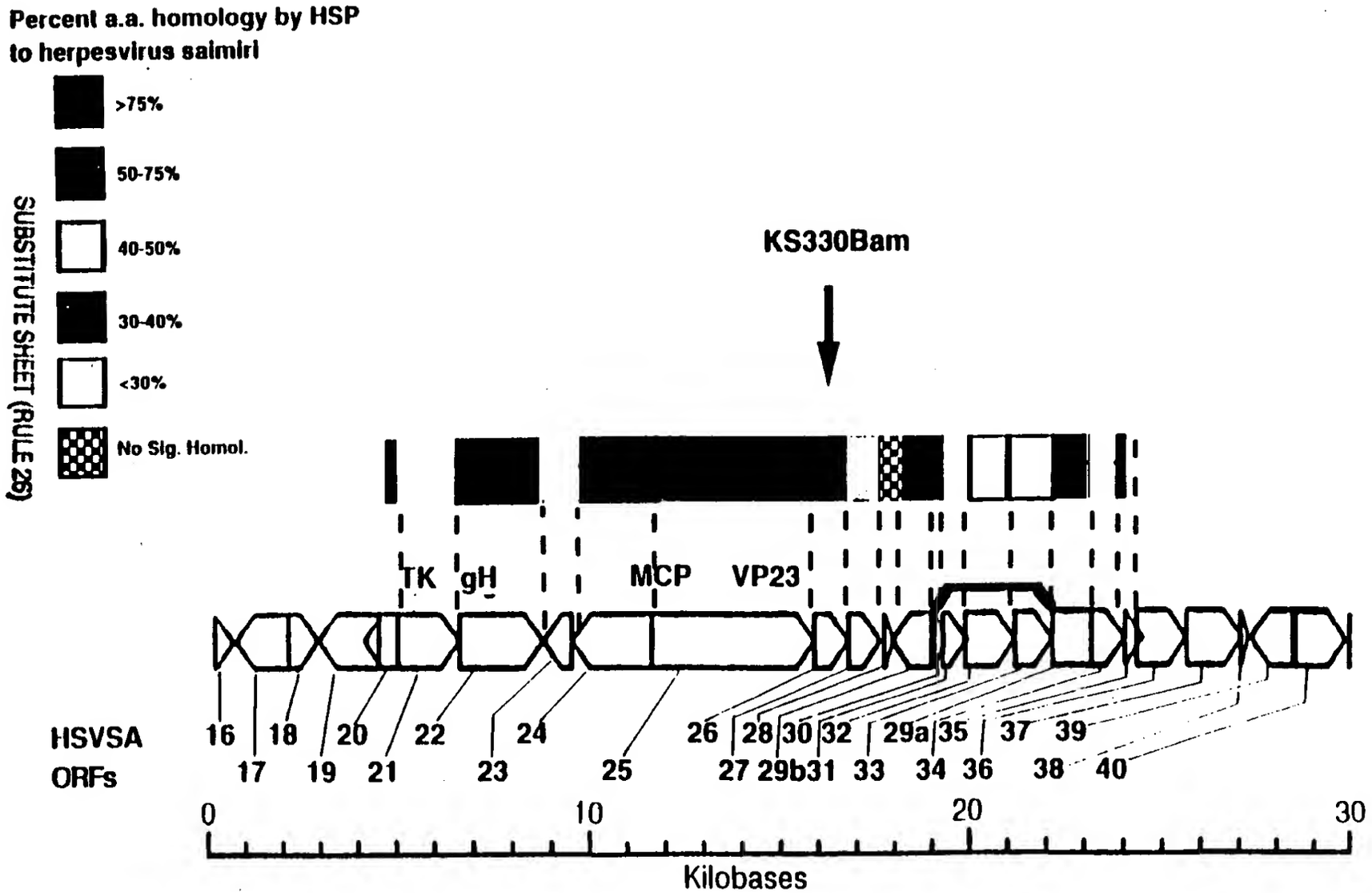


FIGURE 9

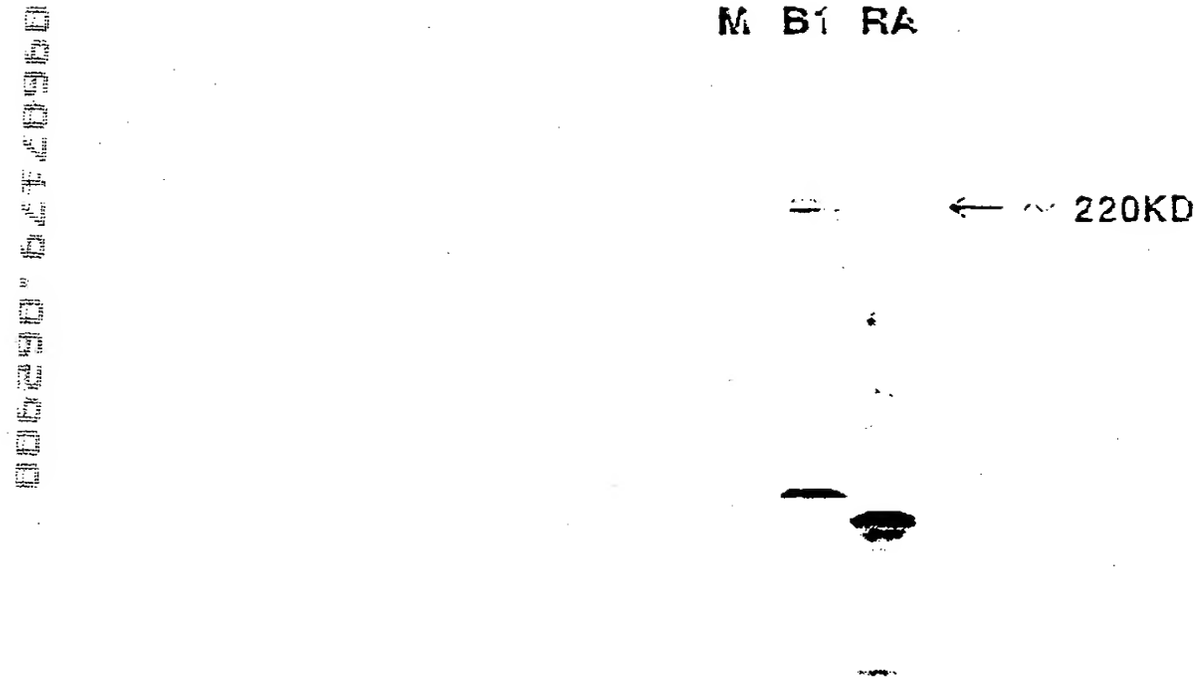


FIGURE 10

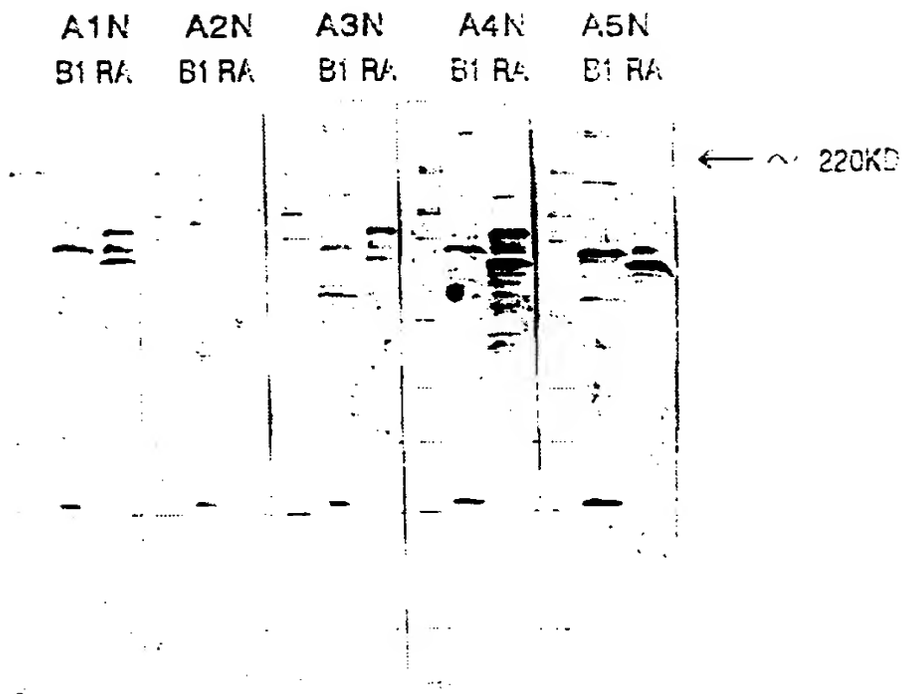


FIGURE 11

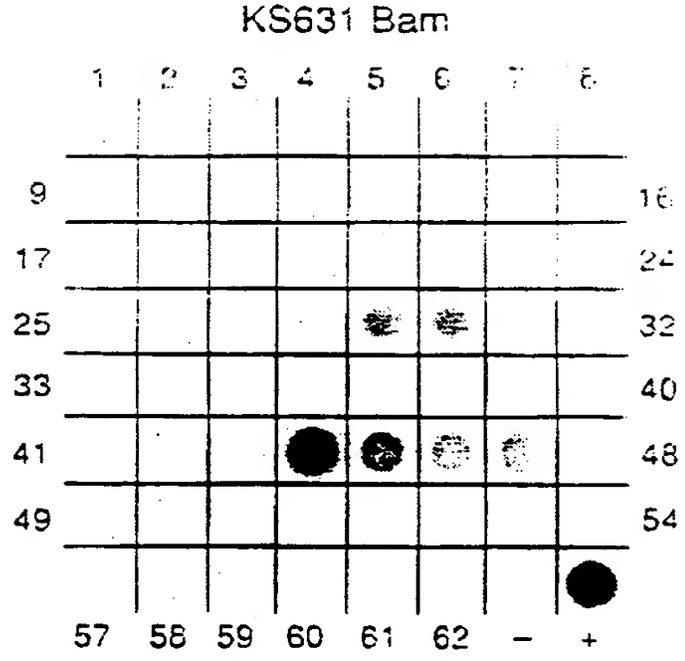


FIGURE 12

Gene Homologs

KSHV							HVS		EHV-2		EBV		
ORF	Start	ATG	Stop	aa	TATA	polyA	ORF	%I,%S	ORF	%I,%S	ORF	%I,%S	F
ORF 20*	20090	20053		184			ORF 20		ORF 20		BXRF 1		
ORF 21	20436	20141	18691	580		18684	ORF 21	32%,50%	ORF 21	31% 51%	BXLF 1	28%,50%	TK
ORF 22	18631	18613	16421	730	18685	16414	ORF 22	35%,55%	ORF 22	31%,52%	BXLF 2	26%,48%	gH
ORF 23	15206	15210	16422	403	14955	16422	ORF 23	33%,57%	ORF 23	34% 56%	BILRF 1	31% 51%	
ORF 24	12843	12948	15206	752	11641	16422	ORF 24	45%,66%	ORF 24	41% 58%	BCRF 1	38% 57%	
ORF 25	13021	12949	8819	1376	11246	8849	ORF 25	65%,81%	ORF 25	63%,79%	BCLF 1	56%,75%	MCP
ORF 26	8999	8791	7876	305	11246	8087	ORF 26	58%,76%	ORF 26	46% 70%	BDLF 1	40% 71%	VP23
ORF 27	7870	7855	6903	290	7419	8087	ORF 27	29% 49%	ORF 27	20% 44%	BDLF 2	19% 41%	
ORF 28	6740	6737	6367	120	6810	5274							
ORF 29b	5029		6363	430	4507	6359	ORF 29b	64% 83%	ORF 29b	68% 82%	BDRF 1	60% 76%	SG
ORF 30	5186	5102	4869	77	5140	4362	ORF 30	33%,55%	ORF 30	38%,56%	BDLF 3.5	30% 53%	
ORF 31	4971	4962	4288	224	5140	4362	ORF 31	43%,63%	ORF 31	38%,64%	BDLF 4	36% 58%	
ORF 32	4388	4319	2957	454	5140	3019	ORF 32	30%,52%	ORF 32	32%,51%	BGLF 1	27% 47%	
ORF 33	3077	2964	2028	312	3020	1653	ORF 33	36%,58%	ORF 33	31% 56%	BGLF 2	32% 52%	
ORF 29a	743	849	1987	312			ORF 29a	53%,68%	ORF 29a	52%,68%	BGRF 1	40% 57%	SG
ORF 34	1085	1040	69	127	3020		ORF 34	42%,59%	ORF 34	29% 60%	BGLF 1	11% 55%	
ORF 35*			138	45		54	ORF 35		ORF 35		BGLF 5		

The nomenclature used for KSHV ORFs is relative to the HVS ORF nomenclature

*, incomplete ORFs, S, strand (C, complementary), TATA, location of upstream TATA elements (TATTAA, TATAAA,TATAAT), polyadenylation signal, (AATAAA, ATTAAA), %I, percentage of aligned amino acid identity, %S, percentage of aligned similar amino acids, F, function, TK, thymidine kinase, gH, glycoprotein H, MCP, major capsid protein, VP23, virion protein, SG, putative DNA packaging spliced gene

FIGURE 13

Patient no	HIV Risk	Non-absorbed		P3H3-absorbed	
AIDS-KS Cases	Group*	HBLab	P3H3	HBLab	P3H3
1	H/B	4050	1350	4050	50
2	H/B	450	50	450	50
3	H/B	450	450	450	50
4	H/B	450	450	150	<50
5	H/B	4050	1350	1350	150
6	H/B	4050	1350	450	50
7	H/B	12.150	450	12.150	150
8	H/B	1350	1350	1350	150
9	H/B	1350	450	1350	50
10	H/B	150	150	150	<50
11	H/B	150	450	50	<50
12	H/B	450	450	450	50
13	H/B	1350	450	1350	50
14	H/B	4050	1350	4050	50
GMT		1153	526	780	63
HIV/AIDS Controls					
1	H/B	150	150	50	50
2	H/B	150	150	50	50
3	H/B	12.150	4050	150	150
4	H/B	1350	4050	150	150
5	H/B	4050	4050	450	450
6	IVDU-F	1350	1350	150	150
7	IVDU-F	12.150	12.150	450	450
8	Hemo	50	150	<50	<50
9	Hemo	50	50	<50	<50
10	Hemo	150	150	<50	<50
11	Hemo	450	1350	50	150
12	Hemo	150	450	50	50
13	Hemo	50	50	<50	<50
14	Hemo	50	<50	<50	<50
15	Hemo	150	450	50	50
16	Hemo	150	150	50	50
GMT		342	450	81	87
Kruskall-Wallace H value**		4.3	0.31	15.4	1.1
p value**		0.04	0.6	0.00009	0.30

*H/B=Homosexual/bisexual males, IVDU-F=Female intravenous drug user, Hemo=hemophiliac male
**Comparison between log titers for case and control sera.

FIGURE 14

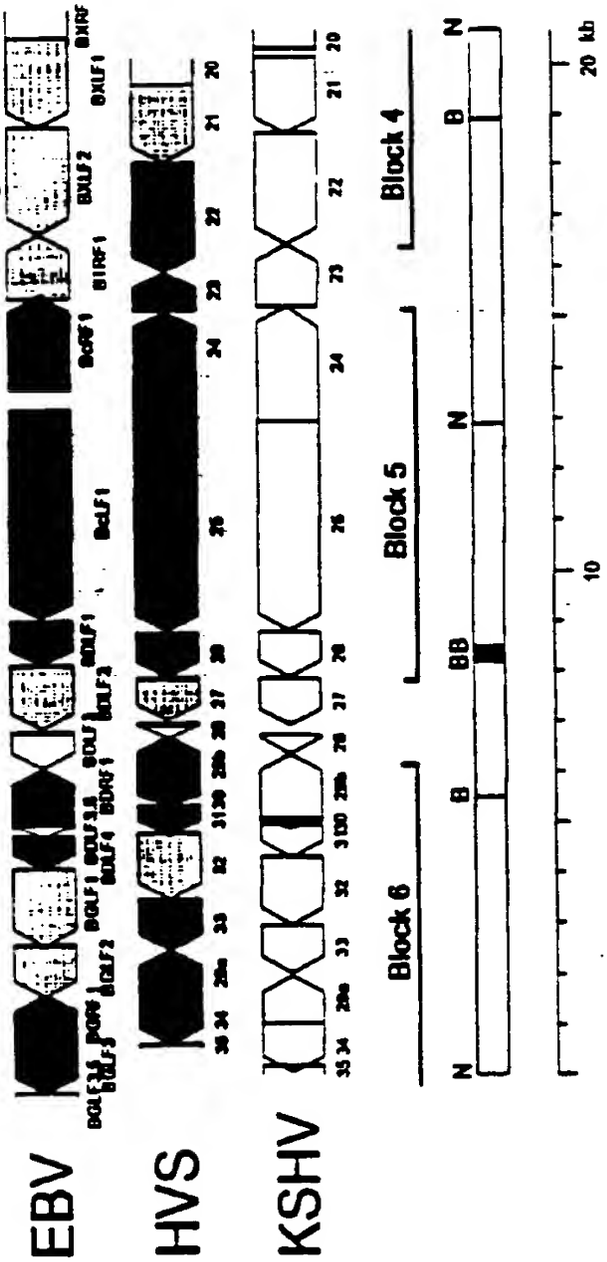


FIGURE 15A

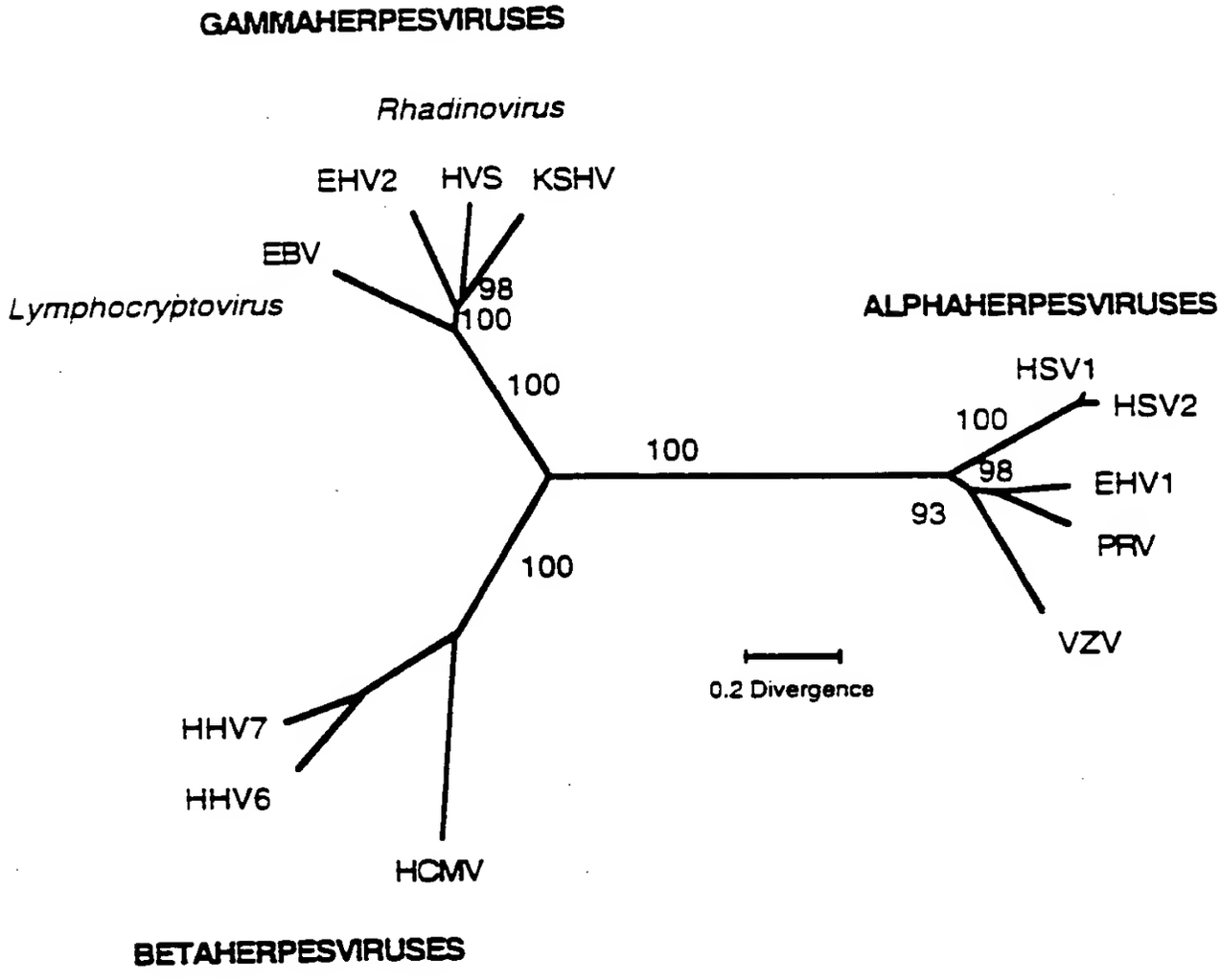


FIGURE 15B

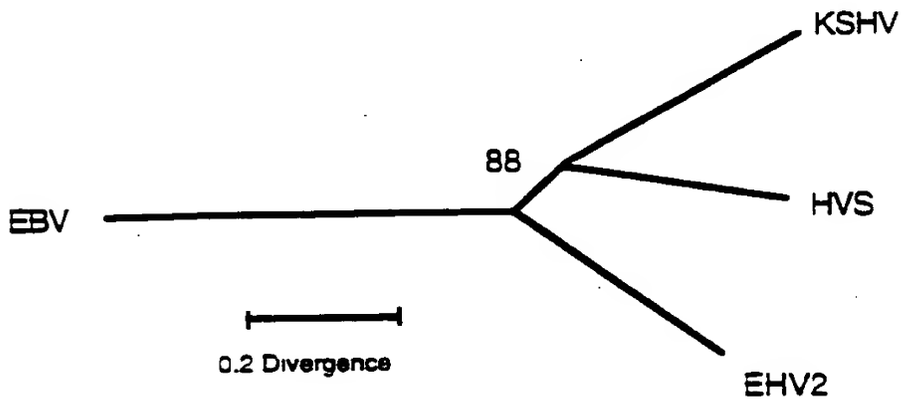


FIGURE 16A FIGURE 16B

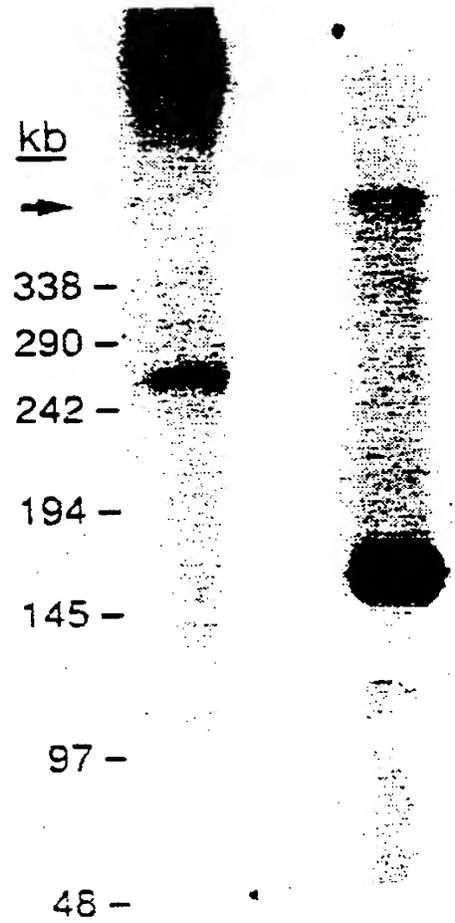
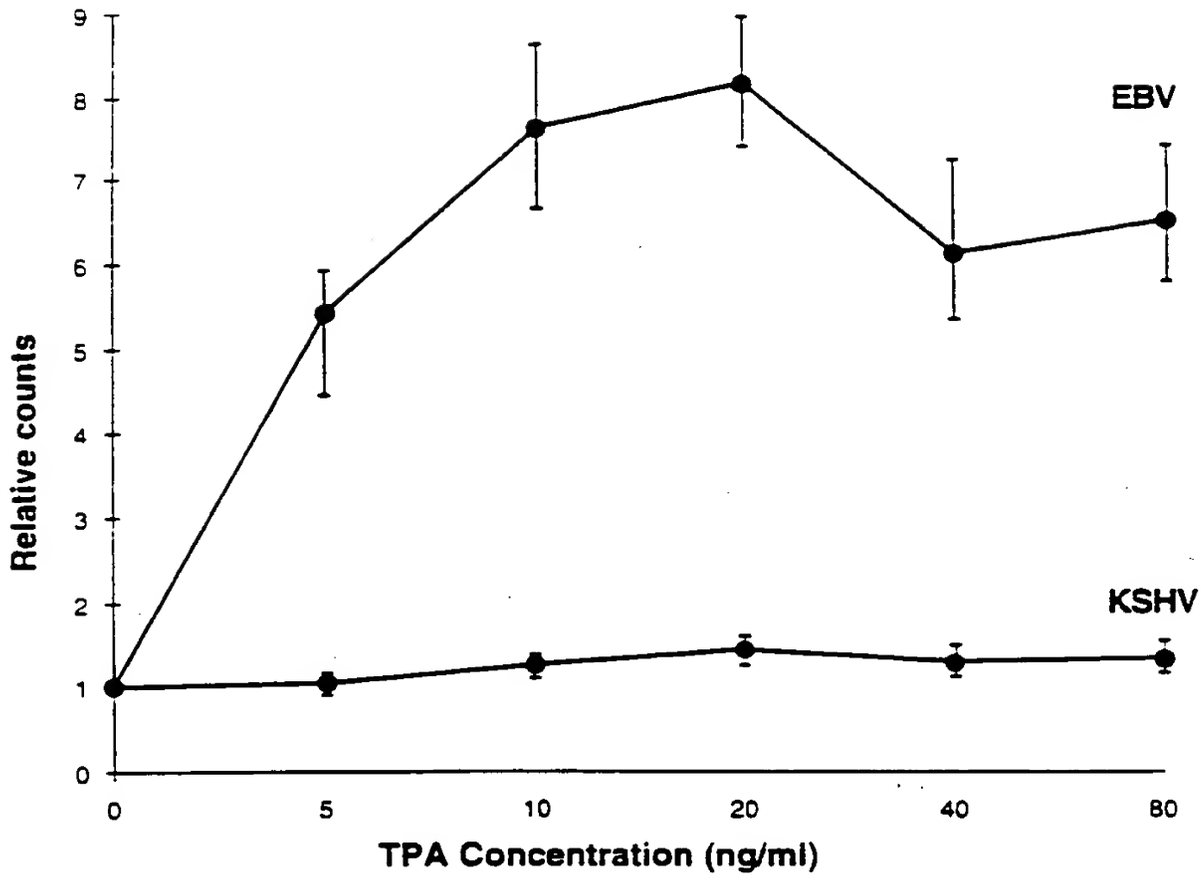


FIGURE 17



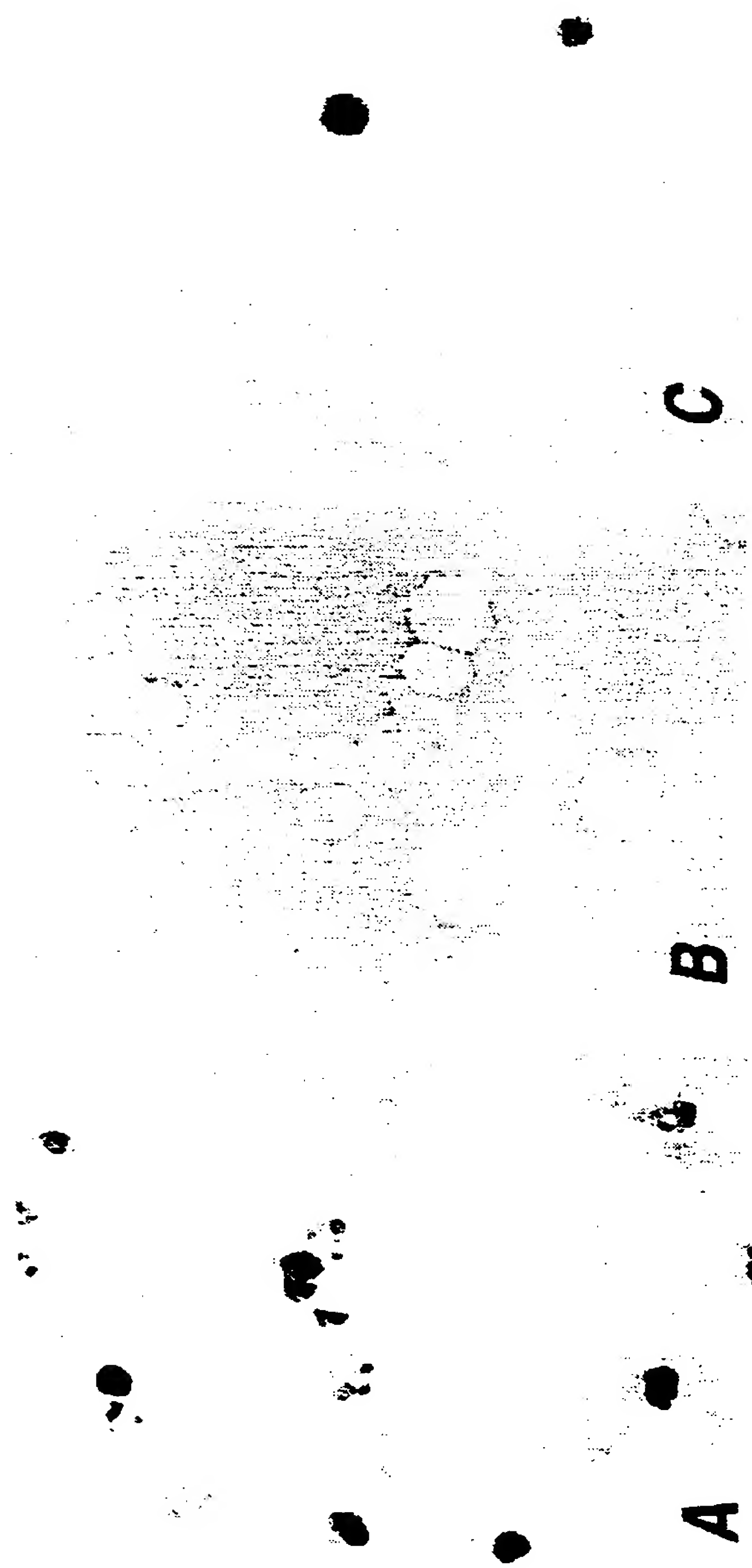


FIGURE 18A

FIGURE 18B

FIGURE 18C

FIGURE 19A

FIGURE 19B

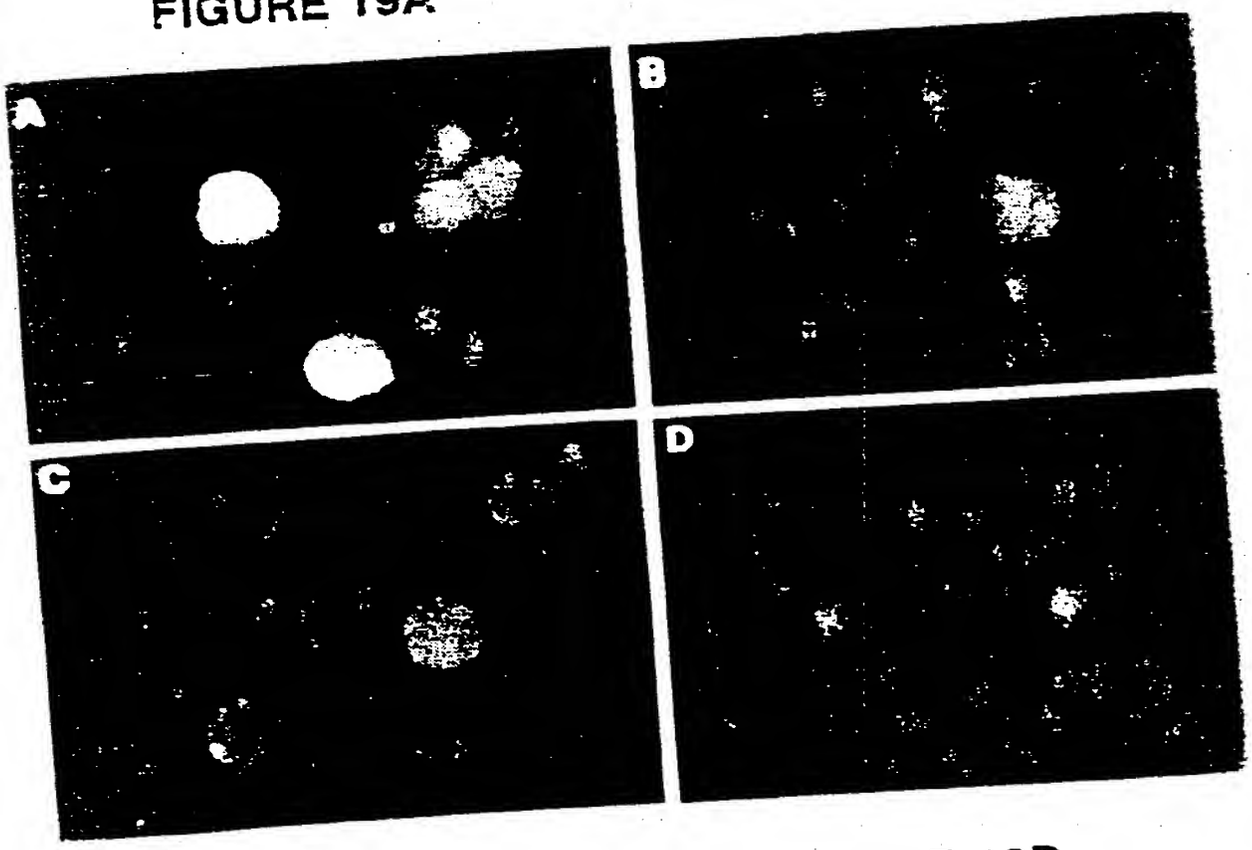


FIGURE 19C

FIGURE 19D

FIGURE 20A

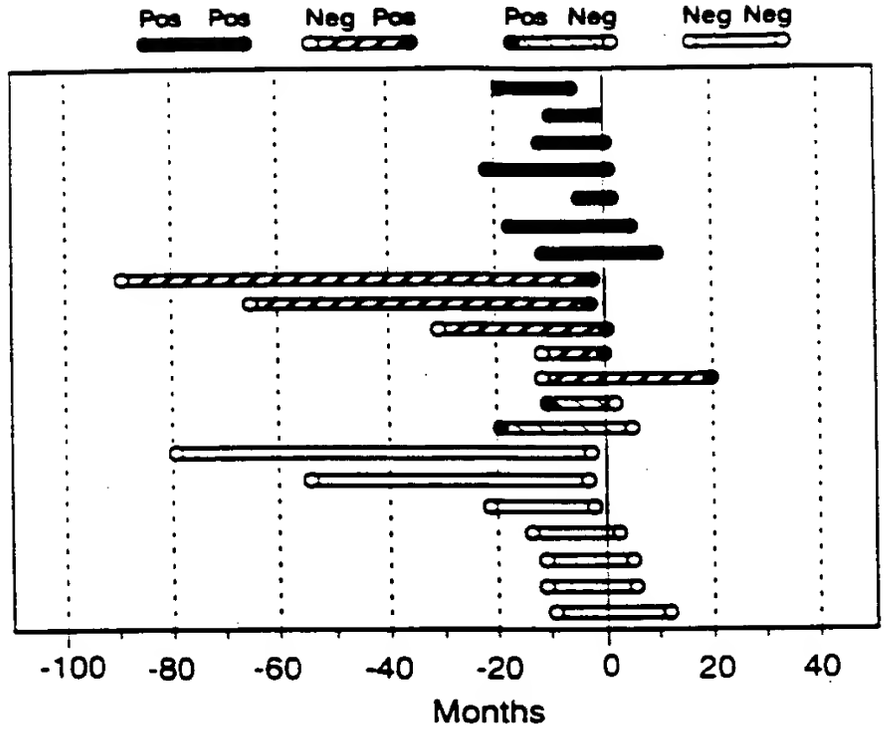


FIGURE 20B

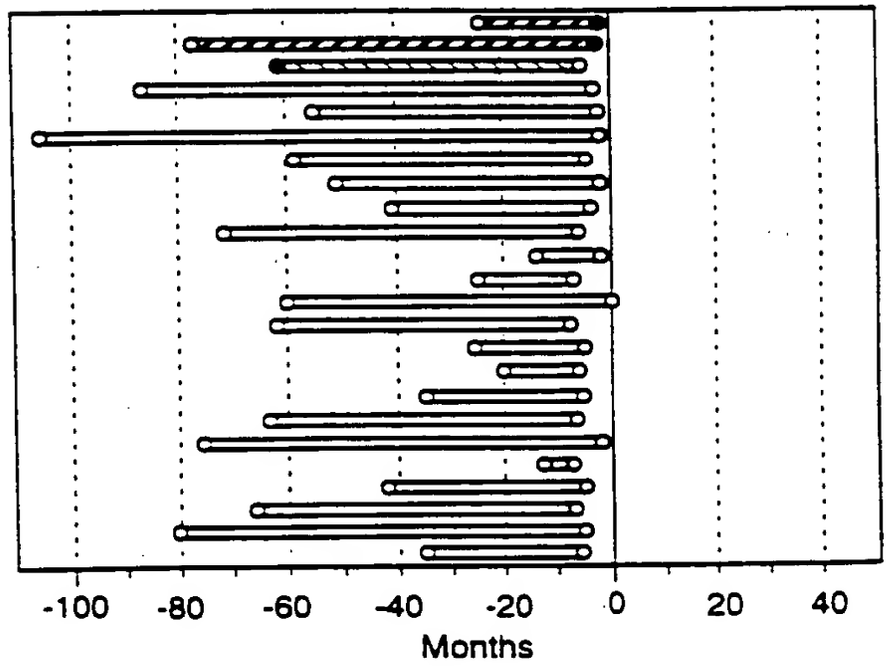


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FIGURE 21

	Initial Sample	Second Sample
AIDS-KS, n=21		
Months prior to or after AIDS-KS median (range)	-13 (87 to -4)	+1 (6 to +20)
CD4+ count, mm^{-1} median (range)	432 (63 to 866)	124 (8 to 640)
KSHV positivity no. (%)	9 (43%)	12 (57%)
Gay/Bisexual AIDS without KS, n=23		
Months prior to AIDS diagnosis median (range)	-55 (106 to -13)	-5 (8 to -0)
CD4+ count, mm^{-1} median (range)	612 (333 to 1309)	215 (11 to 598)
KSHV positivity no. (%)	1 (4%)	2 (9%)
Hemophilic AIDS without KS, n=19		
CD4+ count, mm^{-1}* median (range)		344 (83 to 559)
KSHV positivity no. (%)		2 (11%)

*CD4+ counts available for 15 hemophilic patients at or prior to sample collection date.

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FIGURE 22

PCR analysis of KS330233 in DNA samples from patients with Kaposi's sarcoma and tumor controls

	No. tested	KS KS330233 positive (%)
KS tissue:		
AIDS-KS	24	22 (92)
Endemic KS	20	17 (85)
Total	44	39 (89)
Control Tumors:		
HIV seropositive	7	1 (14)
HIV seronegative	15	2 (13)
Total	22	3 (14)

FIGURE 23

Characteristics of the Study Population

	Patient Disease Status	
	With KS	Without KS
n =	47	42
Male	47	39
Female	0	3
African American	7	4
Non-Hispanic White	38	32
Hispanic	0	5
Other	2	1
Homosexual	44	36
IDU	0	2
Heterosexual	2	3
Other/Unknown	1	1
CD4 cells count		
0-100	28	21
100-300	12	11
>300	7	9
Unknown	0	1

FIGURE 24

Prevalence of Antibody to KSHV p40 in HIV-1 Positive Patients with and without Kaposi's Sarcoma

	Patient Disease Status			
State of Residence	with KS	(%)	without KS	(%)
Connecticut	10/13+	(77)	0/13	(0)
New York	15/23	(65)	3/28	(11)
California	7/11	(64)	0/1	(0)
Total	32/47	(68)	3/42	(7)

+ No. patients with antibody to p40/No. patients studied

WO 96/06159

FIGURE 25

Comparison of KS patients With and Without Antibody to KSHV p40

	Patient Serologic Status	
	p40+	p40-
n =	32	15
African American	7	0
White	25	13
Hispanic	0	0
Other	0	2
Homosexual	29	15
Heterosexual	2	0
Other/Unknown	1	0
CD4		
0-100	17	11
100-300	9	3
>300	6	1
Limited KS	22	8
Extensive KS	10	7
Biopsy Confirmed	30	15

PCT/US95/10194

FIGURE 26

Prevalence of Antibody Detectable by Indirect Immunofluorescence to KSHV Antigens in Chemically Induced BCBL-1 Cells in HIV-1 Positive Patients with and without Kaposi's Sarcoma

	Patient Disease Status			
State of Residence	with KS	(%)	without KS	(%)
Connecticut	10/13+	(77)	0/13	(0)
New York	15/23	(65)	5/28	(18)
California	7/11	(67)	0/1	(0)
Total	32/47	(68)	5/42	(12)

1. No. patients with antibody/No. patients studied

FIGURE 27A

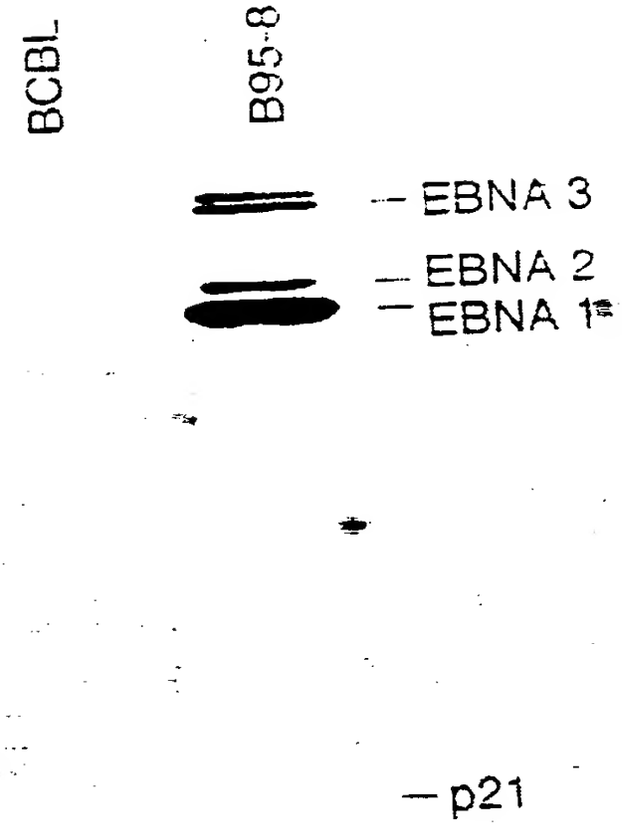
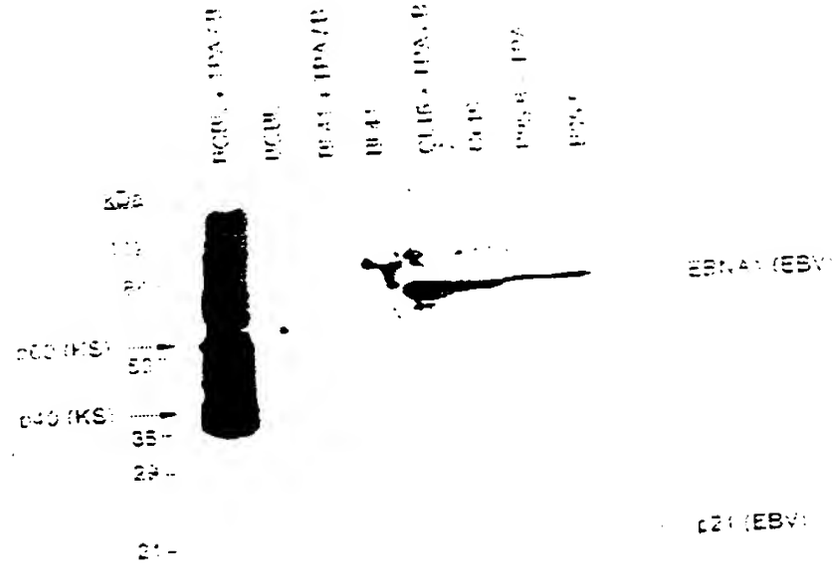
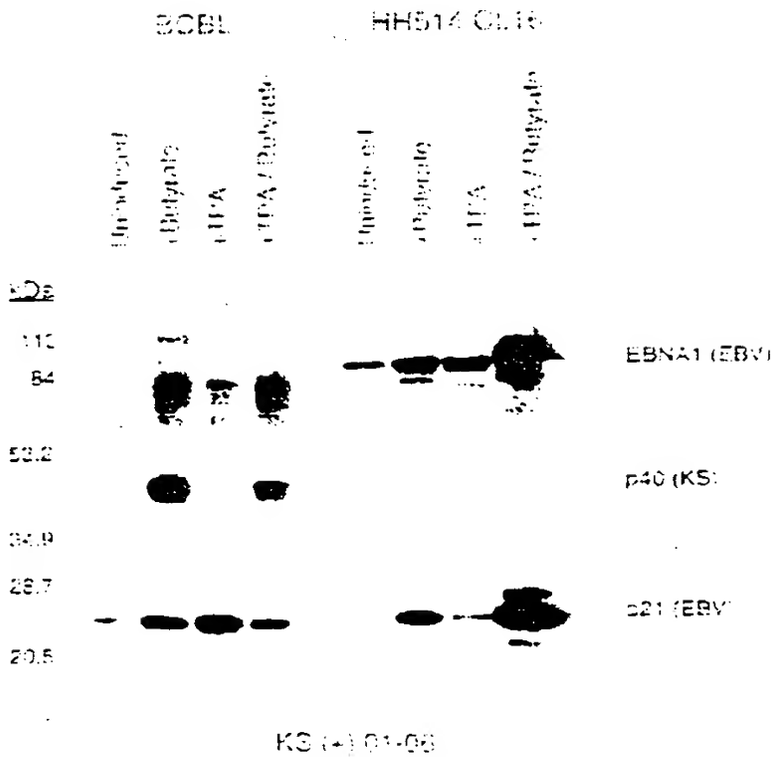


FIGURE 27B



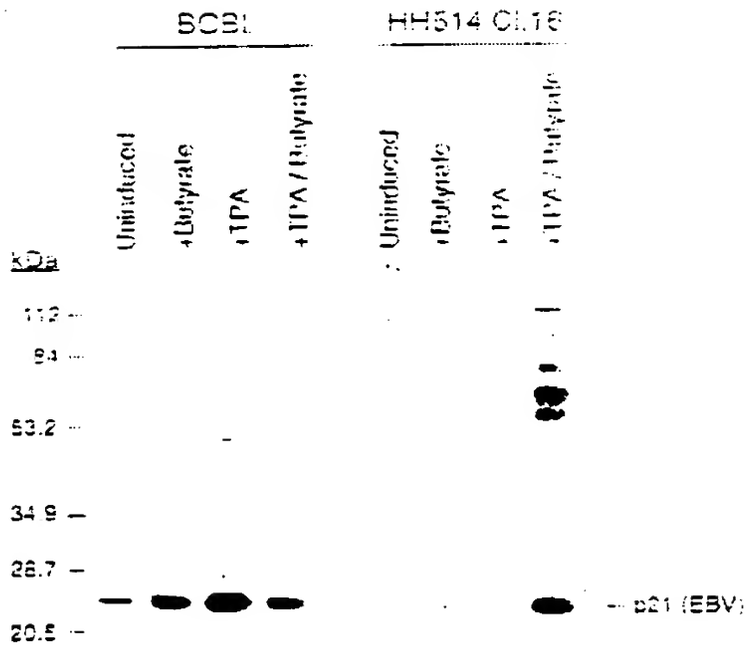
KS (+) 01-03

FIGURE 28A



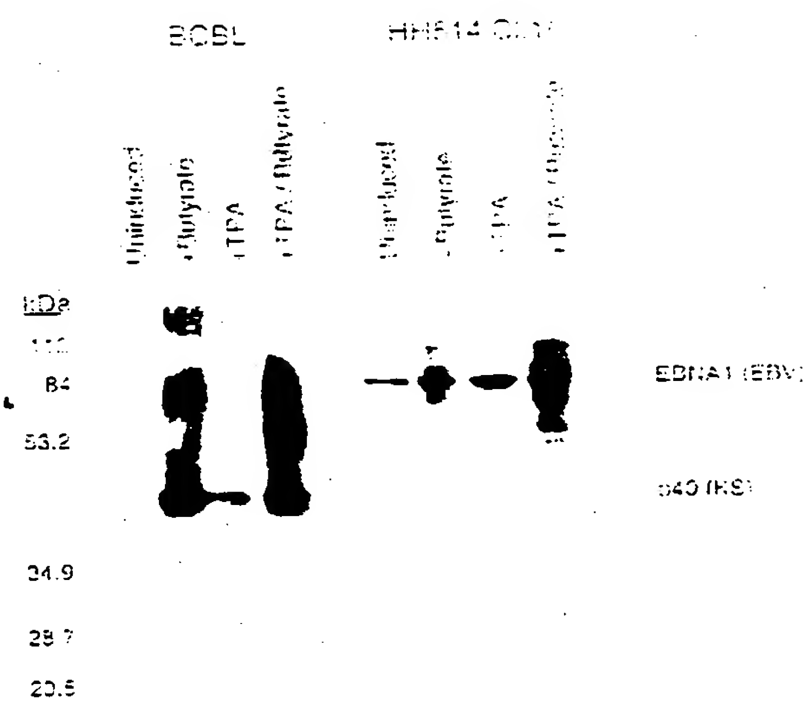
KS (+) 01-05

FIGURE 28B



KS (–) 01-07

FIGURE 28C



KS (+) 04-01

FIGURE 28D

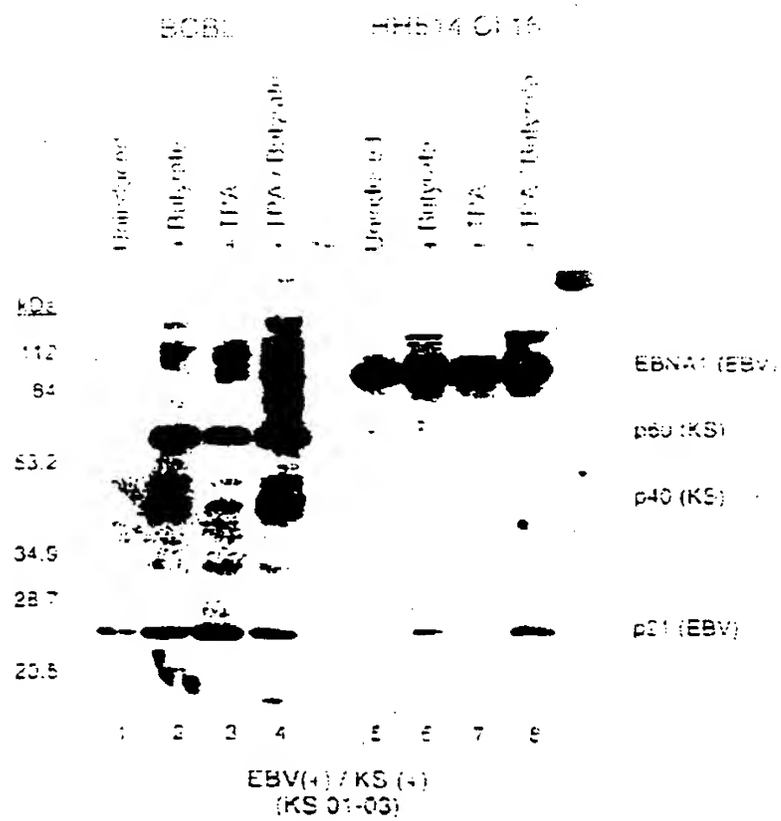


FIGURE 29A

n-butyrate

–

FIGURE 29B

n-butyrate

–

a

b

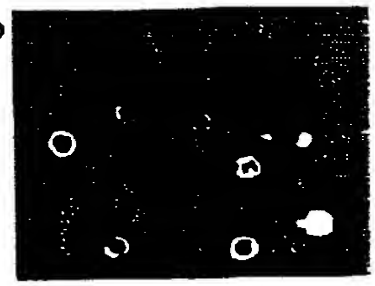


FIGURE 29C

c

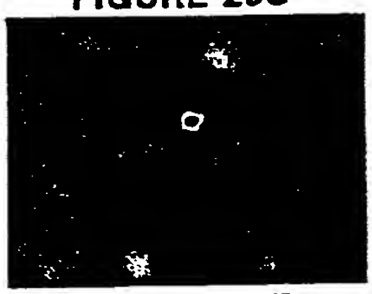


FIGURE 29D

d

FIGURE 29E

e

FIGURE 29F

f